Chemistry Department Postgraduate MSc

Course Handbook

2016 - 2017

- MSc in Cancer Chemistry
- MSc in Chemical Research (Green Chemistry)
- MSc in Chemical Research (Biological Chemistry)
- MSc in Chemical Research (Physical Chemistry)
# Table of Contents

MSc Timetable 2016-2017 ....................................................................................................................... 5

Welcome by the Head of Department .................................................................................................. 6

1. Introduction ........................................................................................................................................ 6

2. What goes on in the Department of Chemistry? ............................................................................. 7
   2.1 Teaching ......................................................................................................................................... 7
   2.2 Research ......................................................................................................................................... 7

3. Departmental Communications ..................................................................................................... 7
   Staff Directory ................................................................................................................................... 9
   Student Communications and Personal Details .............................................................................. 10
   3.1 Student Addresses ...................................................................................................................... 10
   3.2 E-mail ........................................................................................................................................... 10
   3.3 Contacting Academic Staff ....................................................................................................... 11
   3.4 Notice Boards and Pigeon Holes ............................................................................................... 11

4. Absence from the University .......................................................................................................... 11
   4.1 Notification of ill health and other mitigating circumstances .................................................. 11

5. Teaching and Learning .................................................................................................................. 12
   5.1 Teaching Methodologies ........................................................................................................... 12
   5.2 Laboratory Work ....................................................................................................................... 12
   5.3 Broken Glassware .................................................................................................................... 13
   5.4 Laboratory books for recording your experiments (projects) .................................................. 13
   5.5 Safety in the Chemistry Laboratories .................................................................................... 13
   5.6 Pregnancy .................................................................................................................................. 13

6. Learn at Leicester ............................................................................................................................ 14
   6.1 University Library ..................................................................................................................... 14
   6.2 IT Services .................................................................................................................................. 15
   6.3 Student Learning Development .............................................................................................. 16
   6.4 Students’ Union Education Unit (ED) .................................................................................... 17
   6.5 Student Learning Centre ........................................................................................................ 17
   6.6 Languages at Leicester ............................................................................................................ 17

7. University Regulations ................................................................................................................... 18
   7.1 University of Leicester Equal Opportunity Statement .......................................................... 18
   7.2 Senate Regulations .................................................................................................................. 18
   7.3 Examination Regulations ........................................................................................................ 18
   7.4 Student Responsibilities ........................................................................................................ 19
   7.5 Attendance and Engagement Requirements ........................................................................... 19
7.6 Neglect of Academic Obligations............................................................................................................................. 19
7.7 Withdrawal ............................................................................................................................................................... 19
8. Personal Support for Students ......................................................................................................................................... 20
  8.1 Departmental Student Support Arrangements ............................................................................................................. 20
  8.2 AccessAbility Centre .................................................................................................................................................. 20
  8.3 Student Welfare Centre ............................................................................................................................................... 20
  8.4 Counselling and Wellbeing Service .......................................................................................................................... 20
  8.5 Health Care and Registering with a Doctor ................................................................................................................ 21
  8.6 Career Development Service ....................................................................................................................................... 22
  8.7 Personal Belongings .................................................................................................................................................... 22
  8.8 Your Personal Tutor ................................................................................................................................................... 23
  8.9 Personal Development Planning ................................................................................................................................ 23
  8.10 Student/Staff Committee .......................................................................................................................................... 23
  8.11 Feedback and Questionnaires ................................................................................................................................ 24
9. Photocopying ............................................................................................................................................................... 24
10. Responsibilities and Obligations .................................................................................................................................. 24
  10.1 Staff Responsibilities and Obligations ....................................................................................................................... 24
  10.2 Student Responsibilities and Obligations ................................................................................................................ 24
11. Module Information ........................................................................................................................................................ 24
  11.1 Programme and Module Specifications .................................................................................................................... 24
  11.2 Change of Course ..................................................................................................................................................... 25
  11.3 Marking and Assessment Practices .......................................................................................................................... 25
  11.4 Coursework ............................................................................................................................................................. 25
  11.5 Coursework Submission ............................................................................................................................................ 25
  11.6 Examinations .......................................................................................................................................................... 26
12. Progression and Classification of Awards .................................................................................................................... 26
  Masters ............................................................................................................................................................................. 27
  Postgraduate Diploma .................................................................................................................................................... 27
13. Course Structures .......................................................................................................................................................... 27
  13.1 MSc in Chemical Research (Biological Chemistry) ............................................................................................... 28
  13.2 MSc in Chemical Research (Green Chemistry) ...................................................................................................... 28
  13.3 MSc in Chemical Research (Physical Chemistry) .................................................................................................. 29
  13.4 MSc in Cancer Chemistry ......................................................................................................................................... 29
  13.5 MSc Research Project (CH7061) and choice of supervisor ....................................................................................... 30
  13.6 Conditions for Re-sits and Re-submissions ............................................................................................................... 30
14. Appeals Procedures [For full details see the Postgraduate Regulations] ........................................................................ 30
14.1 Appeals against MSc or diploma type ................................................................. 30
14.2 Course termination arising from examination failure/neglect of studies .................. 30
15. Referencing & Academic Integrity .............................................................................. 30
  15.1 Misconduct in written examinations .................................................................. 31
  15.2 Collaboration ........................................................................................................ 31
  15.3 Plagiarism ............................................................................................................. 31
16. Module Descriptions ................................................................................................... 32
  Module CH7001 Advanced Structure Determination .................................................. 33
  Module CH7002 Advanced Synthetic Methods ............................................................ 34
  Module CH7005 Methods in Physical Chemistry I ....................................................... 35
  Module CH7006 Methods in Physical Chemistry II ...................................................... 37
  Module CH7011 Biological Chemistry ........................................................................ 38
  Module CH7021 Green Chemistry .............................................................................. 39
  Module CH7031 Cancer Chemistry ............................................................................. 40
  Module CH7041 Advanced Physical Chemistry .......................................................... 41
  Module MB7001: Introduction to Molecular Techniques ........................................... 42
  Module MB7002: Research Methods in Cell Biology .................................................. 42
  Module CH7051 Research Methodology I ................................................................. 43
  Module CH7052 Research Methodology II ................................................................. 44
  Module CH7053 Research Methodology III ............................................................... 45
  Module CH7061 (includes CH7062/63) MSc Research Project ...................................... 46
17. Experimental Work .................................................................................................... 47
18. MSc Research Project Dissertation (CH7061) .............................................................. 48
## MSc Timetable 2016-2017

<table>
<thead>
<tr>
<th>Wk</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>September</td>
<td>-1</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>October</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>November</td>
<td>6</td>
<td>31</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CH7002 Set - Work I Deadline</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>December</td>
<td>11</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CC MCQ Examination (14th Dec)</td>
</tr>
<tr>
<td><strong>CHRISTMAS VACATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>January</td>
<td>15</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
</tr>
<tr>
<td>February</td>
<td>19</td>
<td>30</td>
<td>31</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>27</td>
<td>28</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>March</td>
<td>24</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
</tr>
<tr>
<td>April</td>
<td>28</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td><strong>EASTER VACATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>31</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>Holiday</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>34</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>June</td>
<td>36</td>
<td>Holiday</td>
<td>30</td>
<td>31</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>37</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>38</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>July</td>
<td>41</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>43</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>44</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>August</td>
<td>45</td>
<td>31</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>47</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td><em>25</em></td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>Holiday</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>1</td>
</tr>
<tr>
<td>September</td>
<td>50</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>
Welcome by the Head of Department

It is pleasure to welcome you to the Department of Chemistry at the University of Leicester. You join a department which is renowned for the quality of its teaching and its highly rated research. We pride ourselves on being a friendly department whose staff are always willing to help and you should never feel reticent about approaching a particular member of staff for advice and assistance.

This handbook provides a great deal of information not only about the content of your course, but also about issues such as welfare, university regulations and your responsibilities as a student. There is quite a lot to read here but it is important that you do read it all at the start of your course so that you are familiar with key issues. If you are not clear about something in this handbook, a good place to start for clarification is to ask your personal tutor.

I am sure that you want to make a real success of your MSc studies. A large part of that success will be down to planning and effort. It is vital that you attend all teaching sessions and meet all deadlines. In addition, you must find sufficient time for private study. The formal teaching we offer provides you with the knowledge you need to work on and practice in laboratory skills and problem-solving. However, it is often through private-study, such as the reading of textbooks and research papers, which delivers a good understanding of a particular topic. If you want to be a high-flyer it is that extra degree of understanding that makes the real difference.

I do also want to emphasise that the staff within the department are here to help and you should never be afraid to ask any of us for advice and assistance. It is in our interest, as well as yours, that you succeed and enjoy the course.

With best wishes,

Professor Andrew M. Ellis
Head of Department

1. Introduction

This handbook has been written to provide an introduction to your one year full-time taught MSc course in Chemical Research (Biological Chemistry, Green Chemistry or Physical Chemistry) or Cancer Chemistry. It aims not only to explain the workings of the Department but also to provide information that you will require throughout your degree programme. Its contents will:

- Outline the structure and organisation of the Department;
- Advise on study skills and written work;
- Explain our teaching and assessment methods;
- Outline our programme structures and module content;
- Advise on the aims and objectives of the programme;
- Offer information on support services for students.

Further information will be provided for you at appropriate times during your studies. In the meantime, we would be pleased to receive your suggestions and ideas for topics that might be included in this handbook in the future.
Please read it carefully now and keep it safely so that you can refer to it when necessary.

**A word of warning:** MSc modules are challenging and will require from you a commitment to continuous study. It is important that you develop efficient study patterns. If you have difficulty studying effectively, then it may help to discuss this with your personal tutor. Some students find it very productive to study together in groups of 3 or 4. This can generate a good work atmosphere, provide mutual support and an opportunity to help each other with difficulties and even supply an element of competition.

2. What goes on in the Department of Chemistry?

2.1 Teaching

Most of the postgraduate teaching is done by members of the academic staff, who are listed below. During your year here you will meet many of the academic staff in lectures and practical classes. We also teach over 300 undergraduate students who also attend a programme of lectures, seminars and laboratory classes. You will meet some of these in overlapping classes.

2.2 Research

The Department is at the forefront of chemical research, and has been highly rated in an independent survey of research in all Chemistry Departments in the UK. All members of the academic staff carry out research and publish results of their work in scientific or technical journals. Some are leaders of a large team which include research fellows and assistants, technicians, visiting academics and postgraduate students (PhD and MSc, whose particular research problem is integrated with the group as a whole). After Christmas, you will become closely involved in some aspects of research when you do your research projects. Prior to that, you will be given details of all the Physical, Biological, Cancer and Green Chemistry research activity in the Department.

3. Departmental Communications

As well as your Personal Tutor, you may contact the following members of staff if you have specific queries or problems.

**Head of Department (HoD)**

<table>
<thead>
<tr>
<th>Program Co-ordinators and Tutors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Postgraduate Tutor</td>
<td>Prof. Karl Ryder</td>
</tr>
<tr>
<td>MSc Course Convenor</td>
<td>Prof. Eric Hope</td>
</tr>
<tr>
<td>Molecular Biology Modules Convenor</td>
<td>Dr Raj Patel</td>
</tr>
<tr>
<td>Characterisation Methods Modules Convenor</td>
<td>Dr Sandeep Handa</td>
</tr>
<tr>
<td>Physical Chemistry I Convenor</td>
<td>Dr Steve Ball</td>
</tr>
<tr>
<td>Physical Chemistry II Convenor</td>
<td>Prof. Andrew Ellis</td>
</tr>
<tr>
<td>Biological Chemistry Module Convenor</td>
<td>Dr Mark Lowe</td>
</tr>
<tr>
<td>Cancer Chemistry Module Convenor</td>
<td>Prof. Paul Cullis</td>
</tr>
<tr>
<td>Green Chemistry Module Convenor</td>
<td>Prof. Eric Hope</td>
</tr>
</tbody>
</table>
Advanced Physical Chemistry Module Convenor: Dr. Kal Karim
Research Methodology I Convenor: Prof. Eric Hope
Research Methodology II Convenor: Prof. Dai Davies
Research Methodology III Convenor: Dr. Greg Solan

Officers & Tutors

Careers Tutor & Personal Development Plan Co-ordinator: Dr. Kal Karim
Special Needs Tutor (AccessAbility): Prof. Paul Cullis
Director of MSc Postgraduate Admissions: Prof. Eric Hope
Senior Tutor: Prof. Andy Abbott
Head of Teaching: Dr Sandeep Handa
Postgraduate Tutor: Prof. Karl Ryder
Admissions Officer: Dr Richard Blackburn
Examinations Officer: Dr Andrew Hudson
Department Safety Officer: Dr Michael Whitcombe
Building Safety Supervisor/Technical Manager: Dr Dominic Banks
Plagiarism Officer: Dr Kal Karim
Outreach Officer: Dr Barbara Villa-Marcos
Library Liaison Officer: Dr Dylan Williams
Athena SWAN: Dr Alison Stuart

Administrative Staff

Business Administration Manager: Claire Cartwright
Programme Administrator: Zahira Ahmed
Programme Administrator: Caroline Bilson
Programme Administrator: Vicky Robbins
Administrative Assistant: Gigi Law
Staff Directory

Day-to-day queries should be sent to chemadmin@le.ac.uk. We would recommend using this e-mail address to ensure you receive the most efficient response. If you need to contact a member of staff individually please see the contact list below. You can also find up-to-date contact details on the Department’s website: www.le.ac.uk/departments/chemistry/people

<table>
<thead>
<tr>
<th>Name</th>
<th>Room Number</th>
<th>Phone Number</th>
<th>E-mail Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Andrew ABBOTT</td>
<td>MC 021</td>
<td>2087</td>
<td><a href="mailto:apa1@le.ac.uk">apa1@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Steve BALL</td>
<td>1.12</td>
<td>2139</td>
<td><a href="mailto:sb263@le.ac.uk">sb263@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Richard BLACKBURN</td>
<td>2.11</td>
<td>2093</td>
<td><a href="mailto:rb436@le.ac.uk">rb436@le.ac.uk</a></td>
</tr>
<tr>
<td>Prof. Paul CULLIS</td>
<td>0.13</td>
<td>2130</td>
<td><a href="mailto:pmc@le.ac.uk">pmc@le.ac.uk</a></td>
</tr>
<tr>
<td>Prof. Dai DAVIES</td>
<td>1.14</td>
<td>2092</td>
<td><a href="mailto:dld3@le.ac.uk">dld3@le.ac.uk</a></td>
</tr>
<tr>
<td>Prof. Andrew ELLIS</td>
<td>0.18</td>
<td>2138</td>
<td><a href="mailto:ame2@le.ac.uk">ame2@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Corey EVANS</td>
<td>-1.19</td>
<td>3985</td>
<td><a href="mailto:cje8@le.ac.uk">cje8@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Antonio GUERREIRO</td>
<td>2.19</td>
<td>4670</td>
<td><a href="mailto:ag398@le.ac.uk">ag398@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Sandeep HANNA</td>
<td>2.10</td>
<td>2128</td>
<td><a href="mailto:sh78@le.ac.uk">sh78@le.ac.uk</a></td>
</tr>
<tr>
<td>Prof. Rob HILLMAN</td>
<td>MC 020</td>
<td>2144</td>
<td><a href="mailto:arh7@le.ac.uk">arh7@le.ac.uk</a></td>
</tr>
<tr>
<td>Prof. Eric HOPE</td>
<td>0.10</td>
<td>2108</td>
<td><a href="mailto:egh1@le.ac.uk">egh1@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Andrew HUDSON</td>
<td>2.18</td>
<td>2099</td>
<td><a href="mailto:ah242@le.ac.uk">ah242@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Kal KARIM</td>
<td>2.20</td>
<td>4668</td>
<td><a href="mailto:kk256@le.ac.uk">kk256@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Mark LOWE</td>
<td>1.11</td>
<td>2109</td>
<td><a href="mailto:mpl10@le.ac.uk">mpl10@le.ac.uk</a></td>
</tr>
<tr>
<td>Prof. Paul MONKS</td>
<td>0.11</td>
<td>2141</td>
<td><a href="mailto:psm7@le.ac.uk">psm7@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Raj PATEL</td>
<td>2/51</td>
<td>7068</td>
<td><a href="mailto:rp31@le.ac.uk">rp31@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Elena PILETSA</td>
<td>2.03</td>
<td>4669</td>
<td><a href="mailto:ep219@le.ac.uk">ep219@le.ac.uk</a></td>
</tr>
<tr>
<td>Prof. Sergey PILETSKY</td>
<td>2.22</td>
<td>4666</td>
<td><a href="mailto:sp523@le.ac.uk">sp523@le.ac.uk</a></td>
</tr>
<tr>
<td>Prof. Emma RAVEN</td>
<td>0.12</td>
<td>7047</td>
<td><a href="mailto:e10@le.ac.uk">e10@le.ac.uk</a></td>
</tr>
<tr>
<td>Prof. Karl RYDER</td>
<td>MC 022</td>
<td>2088</td>
<td><a href="mailto:ksr7@le.ac.uk">ksr7@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Greg SOLAN</td>
<td>1.13</td>
<td>2096</td>
<td><a href="mailto:gas8@le.ac.uk">gas8@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Alison STUART</td>
<td>0.19</td>
<td>2136</td>
<td><a href="mailto:amc17@le.ac.uk">amc17@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Barbara VILLA MARCOS</td>
<td>2.07</td>
<td>1026</td>
<td><a href="mailto:bvm4@le.ac.uk">bvm4@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Michael WHITCOMBE</td>
<td>2.21</td>
<td>4667</td>
<td><a href="mailto:mw319@le.ac.uk">mw319@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Dylan WILLIAMS</td>
<td>0.18</td>
<td>3616</td>
<td><a href="mailto:dpw10@le.ac.uk">dpw10@le.ac.uk</a></td>
</tr>
<tr>
<td>Dr Shengfu YANG</td>
<td>-1.30</td>
<td>2127</td>
<td><a href="mailto:sfy1@le.ac.uk">sfy1@le.ac.uk</a></td>
</tr>
</tbody>
</table>

**MC = Materials Centre**
Administrative & Support Staff

Day-to-day teaching and administrative enquiries – chemadmin@le.ac.uk

Mrs Zahira AHMED 0.01 2100 za4@le.ac.uk
Dr Dominic BANKS 0.09 2131 db377@le.ac.uk
Mrs Caroline BILSON 0.01 5329 cb457@le.ac.uk
Ms Claire CARTWRIGHT 0.09 2119 cfic1@le.ac.uk
Mr Sai CHOUDHURY -1.18 2111 sc90@le.ac.uk
Mrs Chris GODDARD 0.16 3403 cg38@le.ac.uk
Dr Gerry GRIFFITH 2.08 2146 gag3@le.ac.uk
Mrs Dawn KISSOON 1.08 2091 dck1@le.ac.uk
Mr Richard LANE 1.08 2091 rcl3@le.ac.uk
Miss Gigi LAW 0.01 3506 mcl33@le.ac.uk
Mr Mick LEE 2.08 2146/2123 ml34@le.ac.uk
Mrs Gayle PRICE -1.22/-1.25 2085 gn45@le.ac.uk
Miss Vicky ROBBINS 0.01 7843 vkr3@le.ac.uk
Mr Carl SCHIEFERSTEIN -1.22 2193 cs99@le.ac.uk
Mr Kuldip SINGH 2.08 2146/2118 ks42@le.ac.uk
Mr David SWINFIELD -1.18 2111 ds130@le.ac.uk

Student Communications and Personal Details

The University keeps a record of your personal details such as your full name, addresses i.e. home address and term-time address, telephone numbers, personal email address and your emergency contact details. It is important to keep your details up to date as this will help you to receive information about your studies and exams and also ensure that official documents are provided to you with the correct name details.

You can check and update your details by logging-in to MyStudentRecord http://mystudentrecord.le.ac.uk using your University username and password. Click on the My Details tab and you will then be able to review and change your personal details.

It is important that you check your University email account frequently to ensure that you do not miss any important communication from the University.

3.1 Student Addresses

It is essential that you inform the Department of any change of address.

3.2 E-mail

It is important that you regularly check your University e-mail account. Important information is sent to students by this method; we never post to other personal email accounts.
3.3 Contacting Academic Staff

You are welcome to contact lecturers for information or advice, in the first instance by e-mail. If you need to see a member of staff urgently and cannot find them, contact any member of the front office team.

3.4 Notice Boards and Pigeon Holes

It is essential to keep an eye on the 'Postgraduate Notice Board' which is next to the postgraduate pigeon holes which are located by the stairs on the far side of the ground floor.

It is important to check the pigeon holes daily since they are used for mail and for the return of work, practical books and other communications.

4. Absence from the University

The course is very intensive and it is vital you attend all lectures and practical classes. Your attendance at laboratory classes and commitment will be monitored (see Section 7.5). In addition, you will be undertaking a considerable amount of individual and directed study outside of scheduled teaching sessions and it is imperative that you keep up-to-date with these aspects of the course.

4.1 Notification of ill health and other mitigating circumstances

The University recognises that students may suffer from a sudden illness or other serious event or set of circumstances which adversely affects their ability to complete an assessment or the results they obtain for an assessment. In such cases the mitigating circumstances regulations and procedures may be applied. These regulations are designed to ensure the fair and consistent treatment of all students.

You must keep your department(s) informed at all times of any personal circumstances that may impact upon your ability to study or undertake assessments. Tell your department(s) about any such circumstances at the time they occur. You need to supply supporting documentation (e.g. a medical certificate) as soon as possible and no later than the deadline relevant to the assessment(s) affected. Normally, the deadline for submission of a mitigating circumstances claim will be no later than five working days after the assessment deadline to which it relates.

See www.le.ac.uk/sas/regulations/mitigation for full details of the mitigating circumstances regulations and procedures, including the University’s definition of a mitigating circumstance.

The Department of Chemistry procedures for dealing with mitigating circumstances and absence from the University are described below (see also Blackboard site CH5001).

Absence from the University

Your attendance is monitored and if you miss more than 3 sessions in a two week period you will be e-mailed to visit your personal tutor to explain your absence. Continued lack of attendance will be dealt with by the senior tutor, Professor Abbott, or the Head of Department. Serious lack of attendance could result in a Gross Neglect Warning which may result in the removal of your automatic right to resit any assessments that you fail.

If you have any problem which is affecting your work or causing you to miss any of your commitments, you should discuss this with your personal tutor who will respect the confidentiality of the discussion. Your personal tutor may advise you to seek help from one of the support agencies (see Section 8.4). Students who are absent from the University are required to report this to the Department:

If the illness leads to absence from classes.

Where it might be a contributory factor in a failure to meet deadlines or to perform to expectations in any academic assignment.
This should be done using the online form: [https://www2.le.ac.uk/departments/chemistry/current-students/ug/mitigating-circumstances-and-absence-reporting](https://www2.le.ac.uk/departments/chemistry/current-students/ug/mitigating-circumstances-and-absence-reporting)

**Minor illness/absence for a period of up to five working days** – Students must self-certify the absence by filling in the online form as soon as they return, giving details of the reason for the absence and submitting supporting evidence.

**Illness/absence for six or more working days** – Medical advice should be sought, and a medical certificate obtained and submitted. Students should complete the online form after 1 week and a second one when they return to the University.

**Absence from University examinations** – In this case, a medical certificate is required regardless of the duration of the absence. The online form must be submitted by the Monday immediately following the exam period. *The examiners are unable to make allowance for an illness unless you fill in the online form and submit the appropriate supporting documentation.*

### 5. Teaching and Learning

The MSc programmes consist of 180 credits taken full-time over a 12 month timeframe. As such, these programmes are very different to the traditional undergraduate degree programmes that you will have completed. Notwithstanding the full-time aspect to the taught postgraduate degree courses, much of the teaching is superimposed on top of a traditional two-semester undergraduate-type timetable.

Details of the modules are given at the end of this book. These provide a description of the learning outcomes and skills you should develop in each module.

The calendar at the beginning of this document provides week numbers and key dates for the year.

- **September 2016:** The first week is used mainly for registration, familiarisation and induction
- **December 2016:** Cancer Biology examinations
- **March 2017:** Induction activities for the research laboratories
- **May 2017:** Formal Examinations
- **August 2017:** Research thesis submission
- **September 2017:** Research presentation and Oral Examination. Pass lists published
- **January 2018:** Graduation

Any changes to teaching times will be advertised.

#### 5.1 Teaching Methodologies

A considerable component of these courses involves directed and self-directed learning. You will need to read around the subjects using text books and papers from the literature to prepare your own sets of notes and resources. In addition, you will work individually or as part of small teams through problem solving, computer-based learning and other educational techniques.

#### 5.2 Laboratory Work

This year you will be carrying out organic and inorganic advanced practical and extended experiments, as part of the Research Methodology modules (CH7051/2/3). You will undertake an extended research project in conjunction with one of the research groups in the Department (see module CH7061 for details). During this period (March-August) you are expected to spend at least **seven** hours a day on your research project.
5.3 Broken Glassware

Items of glassware lost or broken during laboratory sessions will be charged for.

5.4 Laboratory books for recording your experiments (projects)

You need a special duplicate notebook for recording your experiments. These will be available from shop@le http://shop.le.ac.uk

5.5 Safety in the Chemistry Laboratories

Every effort is made to teach you the hazards associated with handling chemicals. Special risks are identified in the laboratory manuals. For women who are pregnant or are anticipating pregnancy, it is essential that they see the University 'Guidance Notes for New or Expectant Mothers'. This booklet and advice can be obtained from the Students' Union Welfare Office.

*In projects you will have responsibility for ensuring you know how to handle the chemicals you are using, i.e. you must carry out COSHH risk assessments. You will be given instruction about COSHH before you start your project and should discuss the requirements with your supervisor.*

5.6 Pregnancy

The Department has a duty of care for everyone working in the Chemistry buildings, however under current health and safety legislation pregnant workers are considered to be at special risk. The most important aspect for a student who becomes pregnant is to inform the Department as soon as their pregnancy is confirmed.

**The Department's primary advice to a student in this situation is to take temporary withdrawal from their degree course or defer their registration.**

In exceptional cases the Department recognises this may not be practicable and will then consider each case on an individual basis. If the Department decides to allow the student to continue it will advise the student of the risks involved and will instigate the following procedures to minimise the risk.

- The Course Convener with co-operation from other staff as required will produce a full risk assessment of all the practical's being undertaken by the student in the UG laboratory, assessing the implications to a pregnant worker.
- Further risk assessments (including COSHH) will also be undertaken of the chemicals you use and may come into contact with in your practical studies in the various laboratories you may work in.
- The completed risk assessment will be given to you and a copy will be retained by the Department for their records.
- If the Course Convener deems it necessary, a written protocol will be issued highlighting the procedures the student must follow.
- The written protocol will be issued to you and also held by the Department for their records.
- Where practicable further consideration will be given to other experimental work being carried out in the shared laboratories when you are present, any special advice regarding risk from other work will be communicated to you and a record held by the Department.

**The Department will strive to minimise the risks you may encounter working in a shared UG laboratory, however all risks cannot be eliminated.**

On receipt of the risk assessments and any special instructions from the Course Convener you will be required to sign a declaration that you agree to adhere to the risk assessments, follow any special instructions, have read and understood the course of action that the Department is taking to enable you to continue your studies while pregnant.
That you have considered and accept the risk involved to you and your unborn child.

6. Learn at Leicester

Whatever your subject or level of study, there are many, many different ways in which you can access academic advice and support. The Learn at Leicester webpage provides you with further details of this support, together with direct links to a wide range of resources and services to help you:

- Make the most of the Library
- Develop your IT skills
- Manage your own learning
- Improve your English language
- Get independent advice about your course
- Manage your student information
- Sharpen your mathematics and statistics skills

You can access all of this by visiting: www.le.ac.uk/learnatleicester

6.1 University Library

The Library is your gateway to high quality information relevant to your studies. Using it effectively contributes directly to your success.

The Library provides you with:

- access to a huge range of specialist digital and print information resources for your subject;
- help in finding and using information - online, face to face and by telephone;
- individual and group study space, including the Graduate School Reading Room exclusively for postgraduate students;
- PCs and wireless networking for your own device throughout the David Wilson Library;
- study and meeting facilities at the Brookfield Postgraduate Teaching Centre;
- services for distance learners and researchers.

The Library is a shared resource for all members of the University. Please respect it and observe the Library regulations available at www.le.ac.uk/library/about.

To get started, visit www.le.ac.uk/library.

Library services are provided via the David Wilson Library, on the main campus, and the Clinical Sciences Library at the Leicester Royal Infirmary. 1200 study places are provided over the libraries and the collections include 1.2 million volumes. The David Wilson Library is open until midnight in term-time and part of the Clinical Sciences Library is open 24 hours a day. Full details of opening and service hours at all sites can be found in the Library’s leaflets and on the web at www.le.ac.uk/library/. Entrance to the libraries requires a card, which is issued at registration as a joint University/Library card.

The Leicester Digital Library provides internet access to the full text of over 16,500 electronic journals and to other high-quality electronic information resources, including e-books and databases.

(see http://www.le.ac.uk/li/digital/index.html)

In order to use our electronic resources and to receive email correspondence from the Library, students need to use their UoL (University of Leicester) computing account and login details.

(see http://www.le.ac.uk/cc/registration)
The online catalogue enables users to search the Library’s collections, reserve material, and request inter-library loans. Self-service photocopiers are provided at each library site. They are operated by rechargeable cards which are also used for print charging in open access computer areas.

Help with library services is offered via leaflets, web pages and the enquiry service, which can be contacted in person, or by telephone or email. Each Department has a designated Information Librarian who can offer specialised help with subject queries and offers tuition in how to search effectively for material. Items on reading lists are very often in high demand and will therefore only be loaned for a short time. Any queries on recommended or wider reading can be directed to the appropriate Information Librarian. There is also a specialised service for Distance Learning students, which offers further help in obtaining material (see http://www.le.ac.uk/li/distance/index.htm).

The Library can offer specific help for users with special needs, ranging from the provision of equipment for the visually impaired to a fetching service for those with mobility problems. The Library offers services for users with specific learning difficulties, disabilities and long term conditions: for example, the provision of equipment and software for the visually impaired (Zoomtext in both the Main Library and Clinical Sciences to assist with catalogue access, a trolley to assist with the movement of books around the library, free photocopying with a White Card [available from the AccessAbility Centre]), and a fetching service for students who may have difficulties retrieving books themselves. ‘JAWS’ screen reading software, height adjustable tables, and other specialist equipment are located in the AccessAbility Centre in the Library.

For students who wish to use other libraries, perhaps those near home in the vacations, the Library can issue a card under the SCONUL Access scheme. This is a national scheme which allows part-time, distance learning, placement students and both full and part-time postgraduate students to borrow material from participating libraries. Full-time undergraduate students can use other member libraries, but will not be entitled to borrow. The Library welcomes feedback from users on its services. Comments can be submitted on the printed reader comment forms or through the web comment form. The Library guarantees a reply by a senior member of library staff to all such comments received.

6.2 IT Services

Whilst studying at the University you will have a University IT account and email address. There are hundreds of University PCs available with Office 2013 and many specialist programs to help you with your studies.

Visit www.le.ac.uk/it4students for more information about:

- **Student email**: access your email and calendar anywhere; on your laptop or mobile device
- **Printing**: print from any device to a University printer
- **Microsoft Office**: available at no cost whilst you study at the University
- **IT Help**: visit the Help Zone in the Library, phone 0116 252 2253, ithelp.le.ac.uk for IT Self Service, web chat or email ithelp@le.ac.uk
- **IT Training**: attend our workshops in Word, PowerPoint and Excel
- **Wifi**: free access to eduroam wifi on campus, in student accommodation or at other universities
- **PCs on campus**: there are over 900 PCs available, with 350 located in the David Wilson Library (including 24/7 access during exam periods)
- **OneDrive**: the online storage location for all your files
- **Blackboard Virtual Learning Environment**: support and information for all your courses
- **Leicester Digital Library**: access to journals, databases and electronic books online
Support for the University’s central computing services is provided by staff in IT Services. The computing service used by most students is referred to as the UoL service and it makes use of Microsoft’s Windows operating system to provide access to the Microsoft Office suite of programmes and other software that will help you with your studies.

When you complete your University registration you will be issued with an email address and a username for accessing the UoL service.

The CWIS is the University’s Corporate Web Information Service and a web browser must be used to view the information available. The UoL service has Internet Explorer and when you run this browser on campus the University’s “internal” home page will be displayed. Most of the content is provided by University staff and many departments will use this service to disseminate their information.

Students must abide by Senate’s Regulations Concerning the Use of Computing Services. These regulations, which are available on the CWIS, state that “The staff of the University will at all times have authority to maintain good order in the use of the University’s computing facilities and may suspend or exclude from their use any person who breaks these Regulations.”

Most of our teaching buildings have open access Computer User Areas where there are computers you can use and some of these rooms have overnight and week-end access. NOTE: “The University expects students to use computers in open access Computer User Areas only for legitimate academic purposes and with consideration for others’ needs.”

The University subscribes to a number of database services which are protected by “Athens”. To obtain access to these resources you must use your UoL username. NOTE: Support for these external services is provided by staff in the David Wilson Library.

You can use the Outlook Web Access service to obtain secure access to your University email from anywhere in the world. A web browser is required and the address for this service is http://webmail.le.ac.uk/ NOTE: Your UoL username and password will be requested.

The Wireless Network service is freely available to all members of the University and it provides Internet web browsing and access to your University email and files. You can also access Blackboard, the University’s Virtual Learning Environment (VLE), and if registered you can obtain access to the ULTRA service (which runs Linux). NOTE: Your laptop must be suitably configured to connect to the Wireless Network service.

Facilities for internet access are available in all of the study rooms in University accommodation. This residential network, which is provided by a commercial ISP, can be used to access the University’s central computing services.

Registered students may use the printers in our Computer User Areas. A Copycard is required to release print jobs and these cards may be purchased from the David Wilson Library. For more information about the costs please visit the ITS website (see below).

If you are on campus and have an IT related problem or query you can visit the Help Zone in the David Wilson Library. This is a combined Library and IT Services one-stop-shop for help and support. You can also contact the IT Service Desk (email: ithelp@le.ac.uk or tel: 0116-252-2253) or your department may have computer support staff who can offer you help.

Contact: IT Service Desk: Monday-Friday, 9:00-17:00; Tel: 0116-252-2253; Email: ithelp@le.ac.uk. Further information visit the IT Services website at http://www.le.ac.uk/its/

6.3 Student Learning Development

Studying for a degree is a stimulating, challenging and rewarding experience. In order to make the most of this experience, the University of Leicester provides a wide range of resources and services to support and enhance
your academic development in areas such as essay-writing, critical thinking, independent learning and time-management. The Student Learning Development Team is here to help you develop the skills and abilities you need in order to succeed in your studies. To find out more about how we can help you develop your academic skills and abilities, visit our website: www.le.ac.uk/succeedinyourstudies.

6.4 Students’ Union Education Unit (ED)

Education help and advice is provided by the Students’ Union for all students.

If you would find it helpful to talk to someone outside of your department, we offer a free, confidential service to help and advise you about where to go and what to do. If you wish to come and talk to us about your personal circumstances or academic worries, for example, exams or putting together an academic appeal, we will provide professional and friendly support.

You will find the Education Unit staff in the Students’ Union Building on the first floor, within the West Wing. Opening hours are 10.00 am to 4.00 pm, and you can either pop in or book an appointment by contacting us on the following details:

Contact: Students’ Union Education Unit (ED), Students’ Union (First Floor)
+44 (0)116 223 1132 | educationunit@le.ac.uk | http://leicesterunion.com/support/education

Online chat facilities are also available for appointments and drop in sessions.

Facebook – https://www.facebook.com/talktoED (Drop in on Wednesdays, 3:30pm-4:30pm)

Skype - @ed_uca­tion1 (Drop in on Tuesdays, 9am-10am)

6.5 Student Learning Centre

The Student Learning Centre provides practical advice and information to all students on any aspect of study. Individual consultations are available through appointments, and give students an opportunity to discuss study skills queries. Maths Help provides individual consultations for the development of maths and statistics at any level. Research skills consultations provide individual advice on how to most effectively undertake a research degree. There are also programmes of central study workshops for undergraduate and postgraduate students each semester. A wide range of study guides are freely available from the Student Development Zone in the David Wilson Library or from our website. Contact the Centre or check the website for further details of any of our services.

Contact: Student Learning Centre, Student Development Zone, David Wilson Library.
Telephone: 0116 252 5090, e-mail: studentlearning@le.ac.uk, web: http://www.le.ac.uk/slc/

6.6 Languages at Leicester

There are many benefits to learning a new language. Not only could you enhance your career prospects and broaden your cultural horizons, but studies show that you could also improve your literacy skills, boost your memory, increase your attention span and even help to grow your brain!

Study with the Languages at Leicester Team on campus, and you will be taught by expert native tutors who are based within our School of Modern Languages, which has been ranked 3rd in the country in the University League Tables, The Guardian University Guide 2016.

We offer 16 different languages including Arabic, British Sign Language, Chinese, German, Korean and Spanish to name just a few, six levels of learning and two course lengths, so you can study in a way that suits you. Classes take place during evenings and Wednesday afternoons, as well as intensive ‘fast track’ courses on Saturday mornings.
Find out more about Languages at Leicester, including fees and term dates at: [www.le.ac.uk/ml/lal](http://www.le.ac.uk/ml/lal).

The successful completion of a Languages at Leicester course will appear on your Higher Education Achievement Report (HEAR) when you graduate. For further details about the HEAR, please visit: [www.le.ac.uk/hear](http://www.le.ac.uk/hear).

**Contact:** Languages at Leicester +44(0)116 252 2662 | lalenquiries@le.ac.uk | [www.le.ac.uk/ml/lal](http://www.le.ac.uk/ml/lal)

### 7. University Regulations

#### 7.1 University of Leicester Equal Opportunity Statement

The University of Leicester will positively promote equality of opportunity for all current and potential students, staff and their stakeholders. It will not discriminate unfairly on the basis of gender, gender identity, disability, race, ethnic or national origin, age, sexual orientation, socio-economic background, religion and belief, political beliefs, family circumstances and trade union membership.

To find out more information, visit: [http://www2.le.ac.uk/offices/equalities-unit](http://www2.le.ac.uk/offices/equalities-unit)

#### 7.2 Senate Regulations

*Senate Regulations* ([www.le.ac.uk/sas/regulations](http://www.le.ac.uk/sas/regulations)) contain rules and other important information about being an undergraduate or taught postgraduate student at the University of Leicester. The Regulations are part of the formal contract between you and the University; you will have confirmed when completing registration that you will comply with procedures defined in the University’s Regulations.

The *Quick Guide to Student Responsibilities* ([www.le.ac.uk/sas/regulations/responsibilities](http://www.le.ac.uk/sas/regulations/responsibilities)) summarises some of your most important responsibilities as a student at Leicester, as defined in detail in the Regulations. These responsibilities relate to:

- attendance
- submission of work by set deadlines
- term time employment (full-time students – Home/EU and International)
- illness or other circumstances impacting upon studies
- maintaining your personal details
- the additional responsibilities of international students

Failure to adhere to student responsibilities can have serious consequences and may lead to the termination of your studies.

#### 7.3 Examination Regulations

If your course involves any exams you must ensure that you are familiar with the *University’s Examination Regulations* ([www.le.ac.uk/sas/assessments/examregs](http://www.le.ac.uk/sas/assessments/examregs)). These contain a variety of regulatory information and instructions relating to exams, including the rules governing:

- scheduling
- admittance
- student conduct
- permitted and prohibited items and clothing
- use of calculators and dictionaries
- absence due to illness
- cheating
You can also find information about exams in the Students’ Guide to Exams (www.le.ac.uk/sas/assessments/examsguide)

7.4 Student Responsibilities

The University expects its students to behave responsibly and with consideration to others at all times. The University’s expectations about student behaviour are described in:

- the Student Charter
- the Regulations governing Student Discipline
- the Student Code of Social Responsibility
- the Code of Practice governing Freedom of Speech
- the University’s regulatory statement concerning Harassment and Discrimination

These can be found at www.le.ac.uk/senate-regulations

7.5 Attendance and Engagement Requirements

Attendance and engagement with your course is an essential requirement for success in your studies. The University’s expectations about attendance are defined in Senate Regulation 4: governing student obligations (see www.le.ac.uk/senate-regulation4). Full-time students must reside in Leicester, or within easy commuting distance of the city, for the duration of each semester. You should attend all lectures, seminars, practical sessions and other formal classes specified in your course timetable, unless you have been officially advised that attendance at a particular session is not compulsory or you have received formal approval for absence. You are also expected to undertake all assessments set for you.

The University operates a Student Attendance Monitoring procedure. Your attendance will be monitored throughout the academic year and if sessions are missed without an acceptable explanation being provided to your department then neglect of academic obligations procedures will be initiated. This may result in your course of study being terminated.

If you are an international student and your course is terminated this will be reported to UK Visas and Immigration (UKVI), in line with University sponsor obligations.

7.6 Neglect of Academic Obligations

You are expected to attend all learning and teaching events which are timetabled for you. These include lectures, tutorials or practical classes. You are also expected to submit work within the deadlines notified to you. Persistent failure to attend taught sessions and/or to submit work, without good cause, will be considered to be a neglect of academic obligations. Departmental procedures for dealing with neglect are set out within the University’s regulations (see http://www.le.ac.uk/senate-regulation4 ‘Neglect of academic obligations’). In the most serious of cases of neglect the University has the right to terminate a student’s course.

7.7 Withdrawal

Students who wish to withdraw from the University, either temporarily or permanently, should consult their personal tutor and, where applicable, seek advice from the Learning Development Team in the Careers Service and/or Student Welfare Service. A guidance leaflet on withdrawal and an application form are obtainable from the Reception Desk in the Fielding Johnson Building. Requests for temporary withdrawal and associated conditions of re-entry require approval of the University.
8. Personal Support for Students

8.1 Departmental Student Support Arrangements

From discussion of academic progress to friendly advice on personal matters; personal tutors are there to provide support, advice and guidance on an individual level. Common topics for discussion may include course changes, study progress, module choices, exam results, career opportunities or more personal problems such as accommodation or financial difficulties. The Department’s personal tutor system operates in accordance with the Code of Practice on Personal Support for Students: www.le.ac.uk/sas/quality/personaltutor

8.2 AccessAbility Centre

The Centre offers a range of services to all students who have specific learning difficulties, such as dyslexia, disabilities or long-term conditions including mental health which have a substantial day to day impact on their studies. Staff offer one to one support, the co-ordination of alternative examination arrangements and assistance with applications for the Disabled Students' Allowance. It is possible to be screened for specific learning difficulties and access to formal assessment is available. Students are means tested to see if they are eligible for assistance with the cost of formal assessments. The open access Centre acts as a resource base for students and staff and is a relaxed place for students to work. Its computers are equipped with specialised software for screen enlargement. Essay planning and speech output software is on the University network. The Centre has some specialised equipment (CCTV, enlarged keyboard, and chairs) and some for loan (chairs, writing slopes and digital recorders). Photocopying and printing facilities are also available. The Centre welcomes self-referrals as well as referrals from academic staff.

Contact: AccessAbility Centre, David Wilson Library
Tel/minicom: +44 (0)116 252 5002 | Fax: +44 (0)116 252 5513 | accessable@le.ac.uk |
www.le.ac.uk/accessability

8.3 Student Welfare Centre

The Student Welfare Service offers wide ranging practical support, advice, and information for students.

Financial advice is offered, with information on budgeting and funding. Specialised staff can advocate over late loans and other financial issues. Students can apply for hardship grants and loans through the Service.

Information, advice and guidance is available on finance issues and budgeting. In addition, students can apply for hardship awards and loans through the welfare service.

For international students, the Student Welfare Service coordinates The International Welcome Week in September and January. Expert immigration advice is available and students are strongly advised to renew their visas through the scheme provided by Student Welfare. Specialised Officers also support students who experience financial or personal problems.

Contact: Student Welfare Service, Percy Gee Building (First Floor).
Tel: +44 (0)116 223 1185 | Fax: 0116 223 1196 | welfare@le.ac.uk | www.le.ac.uk/welfare

8.4 Counselling and Wellbeing Service

This Service offers a range of expertise and support for the psychological aspects of health and wellbeing.

Services on offer include:
Student Counselling Support

Time-limited, free and confidential one-to-one counselling to help students find ways of dealing with academic-related or personal issues that may be affecting ability to study or engage with student life. Helping students to build on their skills to cope with the challenges of study, work and relationships through workshops.

For information see our website: www.le.ac.uk/counselling

Contact: Student Counselling Service
+44 (0)116 2231780 | counselling@le.ac.uk

Student Mental Wellbeing Support

Practical, emotional and skills based one-to-one support to students managing mental health issues whilst at the University. Helping students to build on their skills to cope with the challenges of study, work and relationships through workshops.

Contact: Student Support (mental wellbeing)
+44 (0)116 252 2283 | mentalwellbeing@le.ac.uk
www2.le.ac.uk/offices/ssds/student-support-mental-wellbeing

Student Healthy Living Service

The Student Healthy Living Service provides direction to health care and health related activity which will contribute to wellbeing and help students to enjoy a balanced life. Students should register for health care local to the University; The University works closely with the Victoria Park Health Centre where staff have expertise in student health. More information can be found on the Healthy Living Service website.

Contact: Student Healthy Living Service
+(0)116 223 1268 | healthyliving@le.ac.uk | go.le.ac.uk/healthyliving

8.5 Health Care and Registering with a Doctor

Illness can affect any one of us at any time and for this reason the University strongly advises you to register with a doctor in Leicester. The Victoria Park Health Centre (www.victoriaparkhealthcentre.co.uk) has expertise in student health and has provided medical care to the University’s students for many years. The Health Centre is located conveniently close to the main-campus and registration is free.

If when you come to University you are already under the care of a ‘specialised team’, have a known medical condition including mental health or waiting for an appointment it is still advisable to register at the Victoria Park Health Centre. Soon after arrival, make an appointment to discuss with one of the doctors who will then be in a better position to communicate with the relevant doctors and help you to manage your condition to avoid any unnecessary disruption to your studies. Please take with you information from your current doctor or consultant which includes diagnosis, current management, including medication (provide a certified English translation if the original is not in English). This is essential for international students as some conditions may be managed differently in this country, particularly in relation to medication which may be licensed differently and may need changing to something which is available to prescribe in this country. If you take medication for your condition you must bring 12 weeks supply with you to ensure continuity until the registration process is complete.

More information about registering with a doctor and other health and well-being services can be found at: http://www2.le.ac.uk/offices/healthy-living-for-students/new-students/uk-students
8.6 Career Development Service

With your drive and determination, the Career Development Service can help you develop the skills and abilities that will not only help get you to where you want to be after university, but will stay with you for life.

Career development at Leicester isn’t just about getting some work experience and writing a CV; we make sure that you get personal support to achieve your aspirations. We’re here for you from the moment you arrive, through to your graduation and beyond. We’ll give you the opportunity to try new things and to figure out what you want from your career—what it is that really drives, motivates and inspires you.

We’ll also help you identify your personal strengths and what you need to develop to be ahead of the crowd. Even if you’re not sure what it is you want to do yet, we can help you develop the skills and experience that you need to get that first job out of university, but also the ability to manage your own career development and succeed on whichever path you choose.

It’s your career development journey and you decide where it is that you want to go. By working with us you make sure that you’re giving yourself the best possible chance to get there. We’ve got the knowledge and resources to spur you on to success so, by working with us, you really will make the most of you!

When you arrive at Leicester you’ll have access to MyCareers: https://mycareers.le.ac.uk, our career management system, by simply using your university username to login. This is the gateway to:

- Booking one-to-one appointments with our career consultants for support with career planning, job hunting, CVs and applications, and mock interviews
- Booking workshops, such as mock assessment centres and psychometric testing
- Meeting employers who are coming on campus
- Finding all the opportunities available exclusively for Leicester students such as paid internships, volunteering, and extra-curricular activities

If you are looking for part time work whilst studying, make sure you sign up to Unitemps, based in the Students’ Union, for opportunities on campus and in the city.

We’re here to support you throughout your time at university so make sure that you come and visit us and log-in to your MyCareers account to get started!

Contact the Career Development Service:
0116 252 2004 | careershelp@le.ac.uk | www.le.ac.uk/careers
@uolcds | fb.com/uolcds

8.7 Personal Belongings

Your personal belongings are not covered by the University’s insurance. You are therefore advised to check whether your parents’ or family policies provide adequate protection. If not, private insurance arrangements should be made.

A lost property service operates from the Security Lodge, which is situated at the far end of the Fielding Johnson Building on Wyggeston Drive, University entrance No. 1.

Bicycles may be brought onto the main campus but must be placed in the cycle racks provided, and appropriate security measures taken to help to prevent theft and damage. For advice on preventing cycle theft and details of the University’s Coded Cycle Scheme visit:

www.le.ac.uk/estates/facilities_&_services/security/CodedCycleScheme.html
8.8 Your Personal Tutor
You will be allocated a personal tutor on your arrival in Leicester. Your personal tutor is probably the first member of the academic staff to whom you will speak at length. She or he will take a general interest in your progress during the course and provide you with advice, encouragement and support as necessary, as well as monitoring your academic performance. Following the Board of Examiners meeting, examination results for the various modules will be available from your personal tutor.

You should feel free to turn to her/him if you have difficulties of any kind, and in particular you should discuss any circumstances which may affect work or your enjoyment of the MSc course. Your relationship should be informal and friendly, and your own attitude will play an important part in determining how far this is possible. It is important that you keep your tutor up to date with developments. If your personal tutor needs to contact you urgently, he/she will usually leave a note in the postgraduate pigeon holes, on the postgraduate notice board or e-mail you directly. You are required to see your personal tutor in the first week of term and thereafter at least once a term and following the publication of the exam results. Very occasionally, a student has wished to change personal tutor. Should you ever wish to do this, you should raise the matter with any member of the academic staff.

8.9 Personal Development Planning
During your course you will be expected to keep a record of your learning and skills development. This is useful in helping you to identify your strengths and weaknesses. Many employers now ask to see such a record. You should discuss this with your personal tutor.

Personal Development Planning (PDP) is a structured and supported process designed to give you the opportunity to reflect on your progress and plan for your future development. In doing so, it is hoped that PDP will better enable you to improve and enhance your academic performance and your prospects for professional and career success after graduation. PDP will help you to:

- recognise the skills and abilities you are developing;
- identify areas for improvement and development; and
- think about how you can improve your employability and career prospects

In addition, Learning Development provides some more general information about what PDP is, and how you can engage with it: www2.le.ac.uk/offices/ld/personal-development-planning-pdp.

8.10 Student/Staff Committee
Student representatives are invited to sit on the Student/Staff Committee (SSC), usually from each year group, including one representative for each degree course. The Committee meets at least once each semester to discuss any issues about the courses or other matters of concern. If you wish any matters to be raised, please contact your year/course representative. Elections for student representatives are usually held by the Student Union, early in the first semester (or at the end of the previous year for returning students).

The Agenda for committee meetings are circulated by email to all members at least one week prior to the meeting date and minutes are circulated as soon as possible following.

For more information about the SSC please see the noticeboard in the George Porter foyer.

The terms of reference will be circulated to all representatives at the start of the year but are also located at: http://www2.le.ac.uk/offices/sas2/quality/codes/documents/sscommittees.pdf

To see the elected representatives for this year:
https://www.leicesterunion.com/top-navigation/voice/academic-representation/current-representatives
8.11 Feedback and Questionnaires
At the end of the theory modules there will be an opportunity for you to comment on the difficulty of the course, quality of lectures, handouts and associated structured learning. This information is used by the Department to improve the quality of the courses. The results will be fed back to the Student-Staff Committee in the following academic year.

9. Photocopying
A printer-photocopier for student use is located in the main corridor opposite the staff pigeon holes.

10. Responsibilities and Obligations

10.1 Staff Responsibilities and Obligations
It is reasonable for you to expect teaching staff to:

- treat each student fairly and impartially regardless of gender, (dis)ability, race, religion, age, marital status and sexual orientation, in accordance with the University's policy on equal opportunities;
- start and finish classes punctually;
- keep appointments made with you;
- listen to your views, either individually or through a Committee;
- return coursework promptly and with helpful comments.

10.2 Student Responsibilities and Obligations
It is reasonable for teaching staff to expect students to:

- observe the University's regulations and code of conduct;
- attend all classes and arrive on time;
- meet assessment deadlines and submit only original work for assessment; you will lose marks if you miss deadlines; see later for policy on cheating and plagiarism;
- register for modules and exams by the set deadline;
- keep a diary of appointments and classes;
- manage their own time and workload and use study periods in a disciplined way;
- inform the Department as soon as possible if you cannot attend a class or keep an appointment;
- make optimum use of the University's opportunities and resources.

11. Module Information

11.1 Programme and Module Specifications
View the programme and module specifications for your course via www.le.ac.uk/sas/courses
In the programme specification you will find a summary of the aims of your course of study and its learning outcomes, alongside details of its teaching and learning methods and means of assessment. The programme specification also identifies the core modules that make up the course and any choice of optional modules. Each module has its own specification that formally records that module’s aims, teaching and learning methods, assessment components and their percentage weighting.
11.2 Change of Course

Discuss your options with your personal tutor, or another appropriate member of staff in your department, if you are considering a change of course. Changes of course require approval by your department and will only be allowed in certain circumstances.

See www.le.ac.uk/sas/courses/transfercourse or www.le.ac.uk/sas/courses/transfermodule for details of the procedures involved and deadlines that apply.

11.3 Marking and Assessment Practices

Details of the assessment methods used for each module are given in the module descriptions section.

Student anonymity will be preserved during the marking of all formal examinations. Summative coursework (i.e. coursework that contributes to your module mark or grade) will be marked anonymously unless there are sound educational reasons for not doing so, or the type of assessment makes marking impractical.

Each programme at the University has one or more External Examiners, who are members of staff of other institutions that review the academic standards at the University and confirm that these are appropriate and comparable with other Universities.

The External Examiners for your courses are listed at:

www.le.ac.uk/sas/assessments/external/current-postgraduate-external-examiners

11.4 Coursework

The Department complies with the University’s policy for the return of marked coursework (see www.le.ac.uk/sas/quality/student-feedback/return-of-marked-work for details of the full policy:

General principles:

- Feedback and provisional grading on coursework will be returned within 21 days of the submission date;
- In exceptional circumstances where this is not possible, you will be notified in advance of the expected return date and the reasons for the longer turn-round time and where possible staff will provide some interim feedback: for example in the form of generic feedback to the class regarding common errors and potential areas for improvement.

11.5 Coursework Submission

You should make sure that you submit your assignments by their due date to avoid any marks being deducted for lateness. Penalties for late submission of coursework follow the University scheme defined in Regulations governing the assessment of taught programmes (see www.le.ac.uk/senate-regulation or www.le.ac.uk/sas/assessments/late-submission).

Deadlines for the various assessment exercises will be set by the Module Convenors. Work that has been submitted late, without an extension having been granted by the Module Convenor, will be subject to the normal University penalties as follows:

- A penalty of 10% of the available marks for the written work will be imposed upon the expiry of the deadline
- A penalty of 5% of the available marks will be imposed on each of the ten subsequent working days

‘Available marks’ means the maximum marks available for the piece of work (for example, 100 would be the available mark in a percentage marking scheme, 20 would be the available mark in a 1-20 marking scheme). ‘Working day’ means a period of 24 hours or part thereof from Monday to Friday inclusive.
Failure to submit a piece of work within a week of the deadline should be recorded by the Convenor who should notify the postgraduate secretary. The Board of Examiners (see later) will write to the student requiring him/her to see their Personal Tutor to explain the failure to submit and requiring the student to submit the work immediately. The student will also be informed that failure to submit course work will seriously jeopardise the chances of obtaining the credits for that module. The letter will be copied to the Personal Tutor and MSc course convenor and recorded on the student’s file.

If the student fails to comply within 7 days and/or fails to submit other items of assessed work then the Board of Examiners will write again to the student, the Personal Tutor and to the MSc course convenor, requiring the student to see the Personal Tutor and the MSc course convenor.

Failure to comply within 7 days and/or continued, unexplained failure to submit work will result in the student being reported to the Departmental Student Monitoring and Progress Committee and, subsequently, the Academic Committee of the College of Science and Engineering and notified that they are in danger of being in neglect of their studies.

These committees may:

- Take no action or
- Issue through the Head of Department a formal ‘best efforts warning’
- Issue through the Head of Department a formal warning that the Examination Board:
  - may not allow the student to resit any examinations failed during the session or
  - will not allow the student to resit any examinations failed during the session other than in the most exceptional circumstances
- Recommend to Senate that the student’s course be terminated.

11.6 Examinations

The Department complies with the University’s policy for the return feedback on examinations (see www.le.ac.uk/sas/quality/student-feedback/return-of-marked-work for details of the full policy:

General principles:

Following the approval of the provisional results by examination boards, departments will make the results available to students within 14 days. Where appropriate this will include a breakdown at the level of the examination and coursework.

Departments will arrange for feedback on examination performance to be provided.

12. Progression and Classification of Awards

The University’s system for the classification of awards and the rules of progression are defined in the Regulations governing taught postgraduate programmes of study (www.le.ac.uk/senate-regulation6). Alternatively, refer to the Student and Academic Services website for information about degree classification and progression: www.le.ac.uk/sas/assessments/pgt-progressionaward

Any specific progression requirements for your course are stated in its programme specification (see http://www.le.ac.uk/sas/courses/documentation)
Masters
To be awarded a Master’s Degree a candidate must:
(i) have satisfactorily completed all coursework requirements;
(ii) taught modules: either obtain at least 90 credits at 50% or a credit-weighted average of at least 50%;
(iii) taught modules: no more than 30 credits with a mark of less than 50%;
(iv) taught modules: no module mark less than 40%;
(v) dissertation: a mark of at least 50%.

To be awarded a Master’s Degree with merit a candidate must:
(i) have satisfactorily completed all coursework requirements;
(ii) taught modules: either obtain at least 60 credits at 60% or a credit-weighted average of at least 60%;
(iii) taught modules: no more than 15 credits with a mark of less than 50%;
(iv) taught modules: no module mark less than 40%;
(v) dissertation: a mark of at least 60%.

To be awarded a Master’s Degree with distinction a candidate must:
(i) have satisfactorily completed all coursework requirements;
(ii) taught modules: either obtain at least 60 credits at 70% or a credit-weighted average of at least 70%;
(iii) taught modules: no module mark less than 50%;
(iv) dissertation: a mark of at least 70%.

Postgraduate Diploma
To be awarded a Postgraduate Diploma a candidate must:
(i) have satisfactorily completed all coursework requirements;
(ii) obtain at least 90 credits at 50% with no more than 30 credits with a mark of less than 50%, and no module mark less than 40%.

13. Course Structures
The breakdown of each MSc degree in Chemical Research is detailed below. All students who register for the course will automatically be registered for these core modules.
### 13.1 MSc in Chemical Research (Biological Chemistry)

<table>
<thead>
<tr>
<th>Module</th>
<th>Credits</th>
<th>Assessment components</th>
<th>Rel. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH7001: Advanced Structure Determination</td>
<td>20</td>
<td>3 hour examination paper; Tutorial work/assessments.</td>
<td>70</td>
</tr>
<tr>
<td>CH7002: Advanced Synthetic Methods</td>
<td>20</td>
<td>3 hour examination paper; Tutorial work/assessments.</td>
<td>70</td>
</tr>
<tr>
<td>CH7051: Research Methodology I</td>
<td>20</td>
<td>Practical; Web of knowledge; Database exercises;</td>
<td>80</td>
</tr>
<tr>
<td>CH7011: Biological Chemistry</td>
<td>20</td>
<td>3 hour examination paper; Tutorial work/assessments.</td>
<td>75</td>
</tr>
<tr>
<td>CH7052: Research Methodology II</td>
<td>20</td>
<td>Practical; Research Project preparation; Plan of practical work.</td>
<td>60</td>
</tr>
<tr>
<td>CH7053: Research Methodology III</td>
<td>20</td>
<td>Practical Course Essay</td>
<td>60</td>
</tr>
<tr>
<td>Research Project I (CH7061; research project)</td>
<td>30</td>
<td>Practical competence; Initiative, independence and originality; Commitment; Organisation and record keeping.</td>
<td>25</td>
</tr>
<tr>
<td>Research Project II (CH7062; dissertation)</td>
<td>20</td>
<td>Structure/clarity and production; Understanding and analysis</td>
<td>50</td>
</tr>
<tr>
<td>Research Project III (CH7063; presentation/oral)</td>
<td>10</td>
<td>Presentation (structure and effectiveness); Viva (aims/results/literature and background theory)</td>
<td>50</td>
</tr>
</tbody>
</table>

### 13.2 MSc in Chemical Research (Green Chemistry)

<table>
<thead>
<tr>
<th>Module</th>
<th>Credits</th>
<th>Assessment components</th>
<th>Rel. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH7001: Advanced Structure Determination</td>
<td>20</td>
<td>3 hour examination paper; Tutorial work/assessments.</td>
<td>70</td>
</tr>
<tr>
<td>CH7002: Advanced Synthetic Methods</td>
<td>20</td>
<td>3 hour examination paper; Tutorial work/assessments.</td>
<td>70</td>
</tr>
<tr>
<td>CH7051: Research Methodology I</td>
<td>20</td>
<td>Practical; Web of knowledge; Database exercises;</td>
<td>80</td>
</tr>
<tr>
<td>CH7021: Green Chemistry</td>
<td>20</td>
<td>2 hour examination paper; Tutorial work/assessments.</td>
<td>60</td>
</tr>
<tr>
<td>CH7052: Research Methodology II</td>
<td>20</td>
<td>Practical; Research Project preparation; Plan of practical work.</td>
<td>60</td>
</tr>
<tr>
<td>CH7053: Research Methodology III</td>
<td>20</td>
<td>Practical Course Essay</td>
<td>60</td>
</tr>
<tr>
<td>Research Project I (CH7061; research project)</td>
<td>30</td>
<td>Practical competence; Initiative, independence and originality; Commitment; Organisation and record keeping.</td>
<td>25</td>
</tr>
<tr>
<td>Research Project II (CH7062; dissertation)</td>
<td>20</td>
<td>Structure/clarity and production; Understanding and analysis</td>
<td>50</td>
</tr>
<tr>
<td>Research Project III (CH7063; presentation/oral)</td>
<td>10</td>
<td>Presentation (structure and effectiveness); Viva (aims/results/literature and background theory)</td>
<td>50</td>
</tr>
</tbody>
</table>
### 13.3 MSc in Chemical Research (Physical Chemistry)

<table>
<thead>
<tr>
<th>Module</th>
<th>Credits</th>
<th>Assessment components</th>
<th>Rel. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH7005: Methods in Physical Chemistry I</td>
<td>20</td>
<td>3 hour examination paper; Tutorial work/assessments.</td>
<td>70</td>
</tr>
<tr>
<td>CH7006: Methods in Physical Chemistry II</td>
<td>20</td>
<td>3 hour examination paper; Tutorial work/assessments.</td>
<td>60</td>
</tr>
<tr>
<td>CH7051: Research Methodology I</td>
<td>20</td>
<td>Practical; Web of knowledge; Database exercises;</td>
<td>80</td>
</tr>
<tr>
<td>CH7041: Advanced Physical Chemistry</td>
<td>20</td>
<td>3 hour examination paper; Tutorial work/assessments.</td>
<td>75</td>
</tr>
<tr>
<td>CH7052: Research Methodology II</td>
<td>20</td>
<td>Practical; Research Project preparation; Plan of practical work.</td>
<td>60</td>
</tr>
<tr>
<td>CH7053: Research Methodology III</td>
<td>20</td>
<td>Practical Course Essay</td>
<td>60</td>
</tr>
<tr>
<td>Research Project I (CH7061; research project)</td>
<td>30</td>
<td>Practical competence; Initiative, independence and originality; Commitment; Organisation and record keeping.</td>
<td>25</td>
</tr>
<tr>
<td>Research Project II (CH7062; dissertation)</td>
<td>20</td>
<td>Structure/clarity and production; Understanding and analysis.</td>
<td>50</td>
</tr>
<tr>
<td>Research Project III (CH7063; presentation/oral)</td>
<td>10</td>
<td>Presentation (structure and effectiveness); Viva (aims/results/literature and background theory)</td>
<td>50</td>
</tr>
</tbody>
</table>

### 13.4 MSc in Cancer Chemistry

<table>
<thead>
<tr>
<th>Module</th>
<th>Credits</th>
<th>Assessment components</th>
<th>Rel. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB7001: Introduction to Molecular Techniques</td>
<td>15</td>
<td>Written practical report x 2 Multiple choice question MB examination (40%:40%: exam 20%). Qualifying mark of 45% required in the exam.</td>
<td>100</td>
</tr>
<tr>
<td>MB7002: Research Methods in Cell Biology</td>
<td>15</td>
<td>Written practical reports x 2 (50%:50%)</td>
<td>100</td>
</tr>
<tr>
<td>CH7002: Advanced Synthetic Methods</td>
<td>20</td>
<td>3 hour examination paper; Tutorial work/assessments.</td>
<td>70</td>
</tr>
<tr>
<td>CH7031: Cancer Chemistry</td>
<td>30</td>
<td>3 hour CH examination paper; Course Essay/assessments Tutorial work/assessments</td>
<td>60</td>
</tr>
<tr>
<td>CH7051: Research Methodology I</td>
<td>20</td>
<td>Practical; Web of knowledge; Database exercise;</td>
<td>80</td>
</tr>
<tr>
<td>CH7052: Research Methodology II</td>
<td>20</td>
<td>Practical; Research Project preparation; Plan of practical work.</td>
<td>60</td>
</tr>
<tr>
<td>Research Project I (CH7061; research project)</td>
<td>30</td>
<td>Practical competence; Initiative, independence and originality; Commitment; Organisation and record keeping.</td>
<td>25</td>
</tr>
<tr>
<td>Research Project II (CH7062; dissertation)</td>
<td>20</td>
<td>Structure/clarity and production; Understanding and analysis.</td>
<td>50</td>
</tr>
<tr>
<td>Research Project III (CH7063; presentation/oral)</td>
<td>10</td>
<td>Presentation (structure and effectiveness); Viva (aims/results/literature and background theory)</td>
<td>50</td>
</tr>
</tbody>
</table>

1 For assessment purposes these are linked
13.5 MSc Research Project (CH7061) and choice of supervisor

MSc students will spend 20 weeks (Monday – Friday full-time) working under the guidance of a chosen research supervisor undertaking a well-defined research project in Biological, Cancer, Green or Physical Chemistry. Students following each degree programme will be issued a list of potential supervisors who are offering projects in related areas. To obtain information on the projects being offered, students should consult the departmental web-pages and approach the corresponding supervisor. A choice of three possible supervisors should be submitted (using the form provided) to Prof Hope by Friday 2nd December.

13.6 Conditions for Re-sits and Re-submissions

Where a student fails to achieve the 50% mark in a module s/he shall be entitled to re-sit or re-submit any of the failed components of assessment associated with the module on one occasion only. The maximum number of credits of taught modules that a student shall be entitled to re-sit or re-submit is 60 credits. Re-sit of Chemistry examinations (CH7001, CH7002, CH7005, CH7006, CH7011, CH7021, CH7031, CH7041) is possible in early September. The mark obtained for re-submitted work or a re-sit is capped at 50%.

14. Appeals Procedures [For full details see the Postgraduate Regulations]

The University has robust systems in place governing the quality and standards of its degree programmes and your experience as a student here. We are confident that, like the vast majority of students here, you will enjoy and be satisfied with your course. In most instances your department will be able to resolve any issues that do occur but we recognise that this will not always be possible. For this reason, the University has official procedures that allow eligible cases to be formally reviewed.

Information about these procedures, including the relevant forms, can be found on the Student and Academic Services website: see www.le.ac.uk/sas/regulations/appeals-complaints. These pages should be read in conjunction with the University’s Regulations governing student appeals (www.le.ac.uk/senate-regulation10) and Regulations governing student complaints (www.le.ac.uk/senate-regulation12).

14.1 Appeals against MSc or diploma type

Students may appeal against their MSc degree or diploma type (see section 12) if, after consultation with their department, they believe that there has been a procedural irregularity in the conduct of the assessment. A written case must be submitted to the Academic Registrar. The Education Unit in the Students’ Union can provide advice to students submitting appeals.

14.2 Course termination arising from examination failure/neglect of studies

Students in this position are entitled to submit evidence of mitigating circumstances for consideration by a panel. Students have a right to attend the panel meeting.

15. Referencing & Academic Integrity

The University has specific regulations about academic honesty (see undergraduate regulations) including cheating in exams and plagiarism (see below). A full statement of the University’s policy on academic honesty can be found on the Chemistry Department Web pages.

Universities are places of learning in two senses. For students on taught courses, learning takes place through listening and talking to academic staff, discussion with peers, reading primary and secondary texts, researching
topics for dissertations and project work, undertaking scientific experiments under supervision and so on. For Ph.D. students and academic staff, learning takes the form of original research, where the outcome will be a contribution to the sum of human knowledge. At whatever level this learning takes place, however, a common factor is the search for truth, and this is why an over-riding concern for intellectual honesty pervades all the University’s activities, including the means by which it assesses students’ abilities.

Throughout your time at the University you will legitimately gather information from many sources, but when you present yourself for any examination or assessment, you are asking the markers to judge what you have made as an individual of the studies you have undertaken. This judgement will then be carried forward into the outside world as a means of telling future employers, other universities, financial sponsors, and others who have an interest in your capabilities that you have undertaken the academic work required of you by course regulations, that you are capable of performing at a certain intellectual level, and that you have the skills and attributes consistent with your range of marks and the level of your award. If you use dishonest means with the aim of presenting a better academic picture of yourself than you deserve, you are engaging in a falsehood which may have the severest repercussions. If you are discovered, which is the most likely outcome, the penalties are severe. If by some chance you are not discovered, you will spend the rest of your life failing to measure up to the academic promise indicated by your degree results and other people’s expectations of your abilities.

15.1 Misconduct in written examinations

Any student found copying from another student, talking in an examination, or in possession of unauthorised material, is reported by the invigilator to the Examinations Officer, who refers the matter to the Registrar. The standard penalty is for a mark of zero to be given to the module concerned, but in some circumstances, particularly in the case of a repeat offence, the penalty could be permanent exclusion from the University.

15.2 Collaboration

In some modules (particularly practical) you will work together in pairs or teams. If a joint or collaborative report is requested, the team can work together right up to the point of submission. In such circumstances, you may be asked to indicate the sections of the report you contributed to, or the assessment may be of the group itself, or there may be an additional form of assessment, such as a presentation session, which allows for individualised grading. A more common arrangement is where the collaborative investigation of a topic is followed by the submission of a report from each team member, where each report is independently produced. In general, we encourage you to discuss problems (e.g. tutorial questions, practical reports) with each other, but where the work is assessed individually, it is important that you do not just copy from each other. For assessed work in particular, any case where copying is suspected will be treated seriously (see notes under Cheating and Plagiarism). If you do not understand what is required of you, ask the module convenor or another academic tutor, or your personal tutor. Do not guess.

15.3 Plagiarism

What we mean by ‘plagiarism’, ‘self-plagiarism’ and ‘collusion’

Plagiarism is used as a general term to describe taking and using another’s thoughts and writings and presenting them as if they are our own. Examples of forms of plagiarism include:

- the verbatim (word for word) copying of another’s work without appropriate and correctly presented acknowledgement;
- the close paraphrasing of another’s work by simply changing a few words or altering the order of presentation, with or without appropriate and correctly presented acknowledgement;
- unacknowledged quotation of phrases from another’s work;
- the presentation of another’s concept as one’s own;
• the reproduction of a student’s own work when it has been previously submitted and marked but is presented as original material (self-plagiarism).

Collusion is where work is prepared or produced with others but then submitted for assessment as if it were the product of individual effort. Unless specifically instructed otherwise, all work you submit for assessment should be your own and must not be work previously submitted for assessment either at Leicester or elsewhere. For more detailed information on how the university defines these practices, see also: www.le.ac.uk/sas/assessments/plagiarism

The University regards plagiarism and collusion as very serious offences and so they are subject to strict penalties. The penalties that departments are authorised to apply are defined in the Regulations governing student discipline (see www.le.ac.uk/senate-regulation11 ‘Plagiarism and collusion: Departmental penalties for plagiarism and/or collusion).

Resources and advice to help you study with integrity and avoid committing plagiarism

Negotiating these various rules, regulations and conventions can sometimes be a challenge, especially if they are new or different from previous experiences of studying. Check the Student Learning Development website for guidance on how to manage your studies so that you meet the required standards of critical scholarship and academic integrity: www2.le.ac.uk/offices/ld/resources/study/plagiarism-tutorial

If you are in any doubt about what constitutes good practice, ask your personal/academic tutors for advice or make an appointment with Student Learning Development for individual advice. You can book an appointment online by visiting: www.le.ac.uk/succeedinyourstudies.

One of the most important practices in ensuring the academic integrity of your work is proper referencing. The following section contains details of how to ensure your work meets the specific referencing requirements for the discipline(s) you are studying.

Referencing style

You must use a consistent referencing style when referring to books and other publications that you have read for your coursework. Most subject areas have a specific referencing style which you are required to use. If you are on a Joint or Major/Minor programme you may find that your subjects use different referencing styles and it is important that you use the correct ones. To find out which referencing style each department uses, and for information and help on each referencing style, please visit http://www.le.ac.uk/library/help/referencing.

Requirements differ on how to arrange bibliographies (complete list of all reference and other sources at the end of your coursework) and whether references are included within the word count for your coursework – please refer to any separate guidance provided on these points.

16. Module Descriptions

The following pages contain a brief description of each Module and the learning outcomes for these Modules. These learning outcomes are only intended as a guide to the content of the course and the skills you will be expected to have gained by the end of the course. They are not meant to be exhaustive and questions may be set on topics which are not stated in these learning outcomes. Similarly, not all learning outcomes will necessarily be tested.

The Department of Chemistry reserves the right, without notice, to make changes to the content of Modules (including their withdrawal) and to the method of assessment.
Module CH7001 Advanced Structure Determination

Convenor: Prof. E. Hope
Contributors: Prof. E. Hope, Prof. E. Raven, Prof K Ryder
Timings: Weeks 0-26
Course credits: 20

Aims: The module continues the development of the theory and application of modern spectroscopic methods, especially resonance spectroscopies (NMR, ESR). Where possible, an interactive 'problem-solving' approach is used in dealing with the determination of structure and shape in synthetic chemistry. Problems will be set and discussed throughout the module.

Intended Learning Outcomes

Subject knowledge: at the end of this module students should:

- Be aware of the range of major spectroscopic techniques currently available to synthetic chemists and to recognise the analytical, structural and stereochemical information they each can provide.
- Be able to discuss the magnetic properties of nuclei and electrons, to summarise the main features (resonant frequencies, line intensities, lineshapes) and to describe the physical and chemical interactions that define these features.
- Be able to analyse complex NMR spectra and extract key data, selecting and making use of appropriate 1D and 2D NMR experiments in simplifying and assigning spectra fully.
- Be able to understand the significance of chemical shift and coupling data, and to be able to present these data clearly and concisely in line with current conventions.
- Be aware of techniques using Correlation Spectroscopy, how and when they are applied and their limitations.
- Be aware of the importance of variation of temperature in the study of time-dependent processes using NMR spectroscopy, and to obtain data concerning equilibria and rates of reaction from VT NMR experiments.

Key skills: at the end of this module students should be able to:

Obtain new information from textbooks, describe appropriate techniques, discuss their use with peers and teachers, solve problems.

Methods: Lectures, set texts, group problem solving sessions, NMR + EPR exercises

Assessment: 3 hour paper (70%); problem workshops, structured learning (30%);

Recommended texts:
A. K. Brisdon, Inorganic Spectroscopic Methods, OUP, 1998
Akitt, J.W., NMR and Chemistry: an introduction to modern NMR spectroscopy, Chapman and Hall, 2000, [543.0877 AKI]
Atherton, N.M., Principles of Electron Spin Resonance, Ellis Horwood, 1993 [538.3 ATH]
Module CH7002 Advanced Synthetic Methods

Convenor: Dr S. Handa
Contributors: Prof. P. Cullis, Dr S. Handa
Timings: Weeks 0-26
Course credits: 20

Aims: This module aims to provide students with the skills necessary to propose a synthetic plan for any molecule. The module will introduce students to the need for and the approaches by which selectivity can be introduced into the synthesis of target molecules. Major landmarks in the field of organic synthesis will be discussed to reinforce synthetic strategies and to give students a perspective of the subject. The course provides a useful revision of the major synthetically useful reactions in organic chemistry.

Intended Learning Outcomes

Subject knowledge: at the end of this module students should:

- Know the functional group reactivity of organic molecules.
- Know the meanings of the terms regioselectivity, diastereoselectivity and enantioselectivity and appreciate how they relate to the design of synthetic routes.
- Be able to apply chemo-, regio-, diastereo- and enantio-selective reactions in the synthesis of molecules.
- Be able to disconnect target molecules to simple building blocks using retrosynthetic analysis and thus propose forward syntheses of target molecules that are both efficient and selective.
- Propose possible synthetic routes to target molecules.
- Use disconnections based on the carbonyl group as a foundation for synthetic planning.
- Be able to obtain new information from a variety of sources including primary research literature, be able to work independently or as part of a group, be able to propose solutions to problems.

Key skills: at the end of this module students should be able to:

Obtain new information from textbooks, describe relevant chemistry and discuss it with peers and teachers, solve problems.

Methods: Lectures, set texts, group problem solving sessions

Assessment: 3 hour paper (70%); Individual and group directed learning assessments (30%)

Recommended reading:
S. Warren, Designing Organic Syntheses, Wiley [547.2 WAR].
G. Proctor, Asymmetric Synthesis, Oxford Primer [547.2 PRO].
R. S. Ward, Selectivity in Organic Synthesis, Wiley [547.2 WAR].
P. R. Jenkins, Organometallic Reagents in Synthesis, Oxford primer [547.05 JEN].
Other information:

Prerequisites: Basic organic and organometallic chemistry knowledge at a level of BSc in chemistry will be required.

Module CH7005 Methods in Physical Chemistry I

Convenor: Dr Ball
Lecturers: Prof Monks (Chemistry); Dr Boesch (Physics); Prof Balzter & Dr Kaduk (Geography)
Timings: Weeks 0-26
Course credits: 20

Aims:

Earth system science views the Earth as a synergistic physical system of interrelated phenomena, governed by complex processes involving the geosphere, atmosphere, hydrosphere and biosphere. Fundamental to the Earth system science approach is the need to emphasize relevant interactions of chemical, physical, biological and dynamical processes. Such processes extend over spatial scales from microns to the size of planetary orbits, and over time scales of milliseconds to billions of years. In building on the traditional disciplines to study the Earth, the “system approach” has become widely accepted as a framework from which to pose disciplinary and interdisciplinary questions, especially in relationship to the human influences exerted on the Earth system (e.g. climate change).

The aim of the course is to give students a contemporary view of Earth system science by looking at some of the important physical, chemical and biological processes occurring within the system, their inter-connectivity, and how together they determine the state of the Earth system.

The course has the following elements:

- **Introduction** [1 lecture]
- **Essential chemical and physical concepts** [2 lectures]: atmospheric lifetimes (residence times); source-transport-sink relationships; chemical kinetics; photochemistry.
- **The stratosphere** [2 lectures]: the structure of the atmosphere, stratospheric ozone, polar ozone depletion.
- **The troposphere** [4 lectures + 1 computer class]; atmospheric chemistry in “clean” (i.e. remote) and “polluted” regions; air pollutants; night-time chemistry; oxidising capacity of the atmosphere.
• Earth system & societal issues [4 lectures]: Earth system science; challenges of urbanisation; anthropogenic climate change; turning science into policy.
• Remote sensing [3 lectures]: satellite measurements of atmospheric composition; the physical principles and target gases.
• Continuous assessment poster presentation [2 sessions]: design/feedback session; poster show.
• Problem classes [2 sessions]: calculations & problems based on the course material
• Revision classes [2 sessions]: review of past exam papers.

Additionally, Chemistry students have the option to also attend teaching for a closely allied module in Geography (GY7104). This module concentrates on Land Surface Processes: e.g. the Carbon Cycle; interactions between the atmosphere / biosphere / ocean / soils; climate change – vulnerabilities, adaption & mitigation. GY7014 provides a view of many of the issues covered in CH4203, but from a complementary “Geography” perspective.

**Learning Outcomes:** At the end of this module students should be able to:

Understand the basis of atmospheric chemistry and physics; the drivers and constrains on atmospheric composition; the concept of the Earth System as an integrative metaphor and the interacting processes therein.

**Key Skills:** At the end of this module students should be able to:

Obtain new information from textbooks, describe relevant chemistry and discuss it with peers and teachers, enhance presentation skills, solve problems.

**Methods:** Set text(s), lectures, example problems, database exercise, presentations and poster production.

As part of the continuous assessment, the following elements will be undertaken:

a) Poster on a current topic in Earth System Science
b) Quantitative problems worksheet and workshops (x2) to review solutions

**Assessment:** End of module examination (70%) 3 hours; Continuous Assessment (30%).

**Other information:**

**Recommended Texts**

Module CH7006 Methods in Physical Chemistry II

Convenor: Prof. A. Ellis
Contributors: Prof. A. Ellis, Dr S. Yang
Timings: Weeks 0-26
Course credits: 20

Aims: The aim is to move away from the conventional formulaic approach to physical chemistry and instead to show you the power of a variety of computational techniques and procedures. Not only will you be shown the underlying principles, but you will also be exposed to the practice of computational chemistry through a variety of demonstrations and mini-projects. You will also encounter some of the theoretical principles that underlie the computational methods, including formal molecular quantum mechanics and how these relate to molecular properties and molecular spectroscopy.

Learning Outcomes: at the end of this module students should:

- Be able to describe the physical principles behind major simulation techniques such as ab initio quantum chemistry, molecular dynamics, and the Monte Carlo method.
- Be able to use well-known software utilising the above methods to predict properties in individual molecules and molecular ensembles. You will also be expected to be able to critically assess the strengths and limitations of such simulations and draw a link to your knowledge of molecular properties and molecular spectroscopy.
- Be able to write short computational routines to solve mathematical problems.
- Be able to apply your knowledge to new chemical problems (this will be an important part of the assessment process).
- Be able to present data from computational simulations in a clear and concise way.

Key skills: at the end of this module students should be able to:

- Appreciate what quantities can be readily and reliably calculated using computational chemistry and what cannot. You will be exposed to software and procedures readily used by many different types of chemist which will allow you to tackle problems in contemporary chemistry. Develop a good knowledge of the underlying principles of molecular spectroscopy and symmetry as applied to small molecules.

Methods: Lectures, computational demonstrations, mini-problem classes, and a longer term project.

Assessment: End of Semester Examination (2 hours) (40%); Computational continuous assessment exercises (40%); multiple choice test (1 hour) on aspects of basic symmetry and molecular spectroscopy (20%).

Recommended course texts:

- G. H. Grant, W. G. Richards, Computational Chemistry, Oxford University Press (OUP Primers) 1995 [542.8 GRA]
- D. C. Young, Computational Chemistry: a practical guide for applying techniques to real world problems, Wiley, 2001 [542.85 YOU]

Other information:

Prerequisites: Basic physical chemistry knowledge at a level of BSc in chemistry will be required.
Module CH7011 Biological Chemistry

Convenor: Dr M. P. Lowe
Lecturers: Dr M. P. Lowe, Prof. E. Raven, Prof. P. M. Cullis
Timings: Weeks 0-26
Course credits: 20

Aims: The aim of this module is to develop an appreciation of a range of fundamental topics in biological chemistry.

Learning Outcomes:
(a) Subject knowledge: at the end of this module students should:
- Appreciate the way in which kinetic data can be analysed and techniques can be applied to the study of various chemical reactions and reaction mechanisms.
- Be able to describe the occurrence and function of metals and non-metals in biological systems.
- Be able to apply different spectroscopic and kinetic techniques to the study of metal ions in biological systems.
- Know how metal ion substitution and the study of model compounds can aid the understanding of complex metalloproteins.
- Be able to discuss electron transfer, oxygen transport and the role of various metal ions in biological systems and discuss the transport and storage of iron.
- Be able to discuss the role played by platinum compounds as anti-cancer therapies.
- Be able to discuss the use of radioisotopes for diagnostic imaging and as therapeutic agents.
- Be able to explain the key principles behind the use of photodynamic therapy.
- Be able to discuss the use of contrast agents in magnetic resonance imaging.
- Appreciate the structure, reactions and biological roles of carbohydrates, nucleotides and nucleic acids.

(b) Key skills: at the end of this module students should be able to:
Obtain new information from textbooks and the world wide web, critically evaluate primary research literature, obtain and review key background information, present and discuss findings with peers and teachers, solve problems.

Methods: Lectures, set texts, literature survey and directed learning.
Assessment: Examination (75%); coursework (25%).

Further reading:
W. Kaim and B. Schwederski, *Bioinorganic Chemistry*, [574.19214 KAI].
P.C. Wilkins and R.G.Wilkins, *Inorganic Chemistry in Biology* [547.19214 WIL].
R.G. Wilkins, *Kinetics and Mechanism of Reactions at Transition Metal Complexes*, 2nd Edn, VCH. [546.6 WIL].
Module CH7021 Green Chemistry

Convenor: Prof. E. Hope
Contributors: Profs E. Hope & A. Abbott
Timings: Weeks 0-26
Course credits: 20

Aims: This module aims to introduce students to wider political/environmental issues which impact upon the chemical industry, to illustrate how chemists wrestle with and solve these issues, and to prompt the students to question how best to exploit their fundamental scientific knowledge.

Intended Learning Outcomes

Subject knowledge: at the end of this module students should:

• Appreciate and be able to apply core chemical principles to wider problems in industry, merchandising and commerce from an environmental, clean technology or Green chemistry perspective.
• Appreciate the impact of social, political, environmental and economic forces on the development and implementation of Greener chemical processes.
• Discuss the applicability, validity and application of metrics for the evaluation of chemical processes.
• Discuss specific alternatives to established processes, including alternative solvents, reactor design, renewable resources, atom efficient reactions, the design of safer (e.g. less toxic) chemicals, energy issues and full life cycle analysis.
• Discuss in detail specific examples of new, Green, approaches to genuine industrial scale chemical processes.
• Know and understand the principles of catalysis, including the fundamental reactions of transition metal catalysis, and be able to write catalytic cycles for some industrially relevant processes.
• Appreciate the role of catalysis in reducing waste and hence the importance of catalysis in Green Chemistry
• Discuss the heterogenisation of catalysts and reagents particularly in terms of Green benefits
• Be able to obtain new information from a variety of sources but in particular from primary research literature, be able to work independently or as part of a group, be able to propose solutions to problems.

Key skills: at the end of this module students should be able to:

Obtain new information from textbooks and the worldwide web, critically evaluate primary research literature, obtain and review key background information, present and discuss findings with peers and teachers, solve problems.

Methods: Lectures, set texts, example problems, marked work, group problem solving sessions

Assessment: 2 hour paper (60%); Research paper interrogations (2 x 20%)

The research paper interrogations assess structure, display materials, content, the ability to access, assimilate, assess, present and disseminate scientific information both orally and in writing. In addition, the ability to debate with peers will be evaluated.

The written examination assesses the understanding and application of the concepts and knowledge of Green chemical principles through analysis and interpretation of seen research publication.

Recommended reading:
http://www.chemsoc.org/networks/gcn/educate.htm
http://www.epa.gov/opptintr/greenchemistry/index.htm
http://www.acs.org/portal/Chemistry?PID=acsdisplay.html&DOC=education\greenchem\index.html
http://chemistry.org/portal/Chemistry?PID=acsdisplay.html&DOC=greenchemistryinstitute\partners.html#electronic

Module CH7031 Cancer Chemistry

Convenor: Prof. P. Cullis
Contributors: Prof. P. Cullis, Dr Blackburn
Timings: Weeks 6-26

Course credits: 30

Aims: The module is directed at the role of chemistry in the understanding and treatment of cancer.

Learning Outcomes:

Subject knowledge: at the end of this module students should:

- be able to explain from the chemical standpoint what cancer is, how it starts and how it can be controlled;
- be able to define the terms apoptosis, angiogenesis, metastasis and explain how small molecules control these processes and demonstrate how this leads to new treatments for cancer;
- be able to outline and explain the key chemical processes involved in the development of cancer, including DNA damage by chemical carcinogenesis, and the key chemical reactions involved in DNA repair; bifunctional cancer drugs, DNA alkylation and crosslinking; radiation therapy of cancer.
- be able to describe and explain the main approaches to cancer drug discovery by a comparison between taxol, cis-platin and gleevec;
- be able to explain the principal techniques for biological assays, particularly methods for high throughput screening;
- be able to describe the importance of genomics and proteomics in the field of drug discovery;
- be able describe and discuss the principles of combinatorial syntheses and the contribution of this field to the identification of lead compounds;
- be able to demonstrate how modern synthetic chemistry is applied to design rationale synthetic routes to some cancer drug candidates;
- be able explain and discuss the main principles and with the different DNA damage repair pathways.

Key skills: at the end of this module students should be able to:

- obtain new information from textbooks, the primary literature and the world wide web,
- critically evaluate primary research literature and obtain and review key background information,
- be able to work independently or as part of a group
- present and discuss findings with peers and teachers and demonstrate problem solving skills.

Assessment: 3 hr paper (60%); course essay (20%); directed and structured learning (20%).

Recommended course texts:

C. Avendano and J.C. Menedez, Medicinal Chemistry of Anticancer Drugs, Elsevier, 2008 [616.994061]
Module CH7041 Advanced Physical Chemistry

Convenor: Dr K. Karim
Contributors: Prof A. Ellis, A. R. Hillman and S. Piletsky
Drs K. Karim, E. Piletska and M. Whitcombe
Timings: Weeks 1-26
Course credits: 20

Aims: The aim of this module is to expose students to some of the exciting concepts in modern nanoscience. The module will describe what is nanoscience and nanotechnology and will discuss some of the underlying principles focusing on number of topics ranging from nanoparticle synthesis, determination of the properties of nanoparticles and nanoclusters, MIPs and surface functionalization through to application in biotechnology.

Intended Learning Outcomes

Subject knowledge: at the end of this module students should be able to:

- Be able to define what is meant by nanotechnology and appreciate its role as a ‘discipline straddling’ topic.
- Describe the forces operating between nanoscale objects
- Appreciate methods of physical chemistry within nanotechnology;
- Show insight into the nature, mechanism and dynamics of a range of physical and chemical processes;
- Be able to describe the occurrence and function of metals and non-metals in biological systems;
- Be able to discuss a range of methods for fabricating nano-objects, including ‘wet’ chemical methods and gas phase routes.
- Design or select an appropriate nano-materials for use in biomedical devices
- Be familiar with the fundamentals and application of important methods for nanoparticle characterisation, including various types of microscopy and spectroscopic techniques such as surface-enhanced Raman spectroscopy.
- Define what molecular imprinting is
- Demonstrate the computational design, synthesis and characterisation of MIPs and evaluate the results
- Describe some important applications of nanoscience and nanotechnology, and appreciate how their structure affects their properties

Key skills: at the end of this module students should be able to:

Obtain new information from textbooks and primary literature, describe relevant physical principles and discuss them with peers and teachers, solve problems both analytically and via the use of computers.

Methods: Lectures, laboratory work, set texts, group problem solving sessions
Assessment: 3 hr paper (75%); directed and structured learning (25%).
Module MB7001: Introduction to Molecular Techniques

Convenor: Dr K. Clark
Contributors: Drs. O. Makarova, K. Tanaka
Timings: Weeks 0-2
Course Credits: 15

Module description: This 3 week practical module will introduce students to the basic techniques in molecular biology and good laboratory practice. Techniques covered will include PCR, RT-PCR, DNA extraction, restriction endonuclease digestion, molecular cloning, agarose gel electrophoresis, RNA extraction and cDNA synthesis.

Aims: To provide an opportunity for the students to develop laboratory skills and apply basic cellular and molecular methods to investigate cellular function, genetic variation and gene expression

Intended Learning Outcomes

Subject Knowledge: at the end of this module students should be able to:

- Understand the theory and practice of key molecular techniques.
- Plan experiments, prepare reagents accurately and use micropipettes.
- Be aware of laboratory safety, COSHH regulations, risk assessment and safe handling of toxic reagents.
- Use a laboratory notebook, communicate scientific information in a written form and be aware of laboratory standards.
- Isolate DNA and RNA from tissues or cultured cells.
- Gain an insight into cell culture methods.

Key skills: at the end of this module students should be able to:

Record, analyse and present data in an appropriate format, describe relevant techniques and discuss them with peers and teachers.

Methods: Lectures, laboratory work, set exercises.

Assessment: MCQ Examination; Two written practical reports will be assessed.

Module MB7002: Research Methods in Cell Biology

Convenor: Dr R. Patel
Contributors: Drs. R. Patel, I. Gyory
Timings: Weeks 3-6
Course Credits: 15

Module description: This module comprises a three week practical course that covers a range of techniques used to study intracellular signalling pathways, cell proliferation, cell death and the intracellular localization of subcellular organelles and proteins. Techniques covered will include cell culture, transient transfection, immunoprecipitation, polyacrylamide gel electrophoresis, Western blotting, mass spectrometry, cell proliferation assays, flow cytometry, the use of Green Fluorescent Protein (GFP) and other epitope tags and immunofluorescence and electron microscopy.

Aims: To apply cellular and molecular methods to investigate cellular function in cancer cells and to develop knowledge of the experimental approaches used in cancer research. To develop skills in researching and reviewing the scientific literature. Develop written and verbal communication skills.
Intended Learning Outcomes

Subject Knowledge: at the end of this module students should be able to:

- Understand and apply the techniques used to assay activation of intracellular signalling pathways.
- Understand the role of oncogenes in regulating intracellular signalling, cell growth and cell proliferation.
- Understand the principles of light, fluorescence and electron microscopy.
- Use indirect immunofluorescence and GFP to study the intracellular localization of organelles and proteins.
- Assay cell proliferation and identify the stages of mitotic cell division.
- Apply mass spectrometry in the identification of proteins and their posttranslational modifications.

Key skills: at the end of this module students should be able to:

- Record, analyse and present data in an appropriate format, describe relevant techniques and discuss them with peers and teachers.
- Demonstrate competence in data analysis and interpretation.
- Prepare a logically-structured scientific report.

Methods: Lectures, demonstrations, tutorials and laboratory work.

Assessment: Two written practical reports will be assessed.

Module CH7051 Research Methodology I

Convenor: Prof. E. Hope

Contributors: Various

Timings: Weeks 0-7 (Chemical Research)        Weeks 6-17 (Cancer Chemistry)

Course credits: 20

Aims: The aim of this module is to give the students experience in the techniques and skills that are important in order to carry out chemical research. The module aims to develop skills such as planning, organisation and record keeping, literature searching, practical laboratory skills, data analysis, report writing, oral presentation and team work.

Intended Learning Outcomes

Subject knowledge: at the end of this module students should:

- Be able to carry out a number of advanced experimental procedures.
- Be able to purify and analyse chemical products using a variety of methods.
- Be able to take charge of their experiments and design them so that they can complete their tasks.
- Be able to manage their time effectively.
- Be able to write comprehensive scientific reports aimed at a scientific audience.
- Be able to present scientific information in a clear and concise fashion.
- Be able to use appropriate resources, including computer databases to find out information about a particular area of research, e.g. Web of Knowledge, Crossfire.
- Be able to assess the safety issues of the work they are doing.

Key skills: at the end of this module students should be able to:

Record, analyse and present data in an appropriate format.

Methods: Lectures, laboratory work, set exercises
Module CH7052 Research Methodology II

Convenor: Prof. D. L. Davies
Contributors: Various
Timing: Weeks 8-24
Course credits: 20

Aims:

• To extend and develop the skills in information retrieval and practical laboratory skills from CH7051.
• To formally introduce students to the research laboratory environment using introduction to literature precedents, pre-laboratory planning and advanced laboratory training.

Intended Learning Outcomes

Subject knowledge: at the end of this module students should:

• Be able to write comprehensive scientific reports aimed at a scientific audience.
• Be able to present scientific information in a clear and concise fashion.
• Be able to summarise the important points of a number of related research papers and make suggestions for further work in that area.
• Be able to use appropriate resources, including computer databases to find out information about a particular area of research, e.g. Web of Knowledge, Crossfire.
• Be able to plan a research project, setting shorter and longer term goals.
• Be able to assess the safety issues of the work they are doing.
• Be able to carry out a number of advanced experimental procedures.
• Be able to purify and analyse chemical products using a variety of methods.
• Be able to take charge of their experiments and design them so that they can complete their tasks.
• Be able to function as part of a team.
• Be able to manage their time effectively.

Key skills: at the end of this module students should be able to:

• Record, analyse and present data in an appropriate format.
• Appreciate the significance of their research project within the wider framework of their research area.

Methods: Lectures, research laboratory work, formative and summative feedback sessions with project supervisor.

Assessment: Research Project Introduction (35%); Research Project plan (5%); Practical (60%).

Other information:
Prerequisites: BSc or equivalent knowledge of practical techniques

Structure of module:
A plan of the practical work should be assembled and discussed with the project supervisor. A literature survey of material related to the research project should be made. The first drafts of these should be submitted to the project supervisor at the start of Week 25. Introductions to working in the research laboratories, a Fire Safety Talk and demonstration will be given in Week 25.

**Module CH7053 Research Methodology III**

**Convenor:** Dr G. A. Solan  
**Contributors:** Various  
**Timing:** Weeks 8-26  
**Course credits:** 20

**Aims:**
- To extend and develop the skills in information retrieval and practical laboratory skills from CH7051.  
- To formally develop student’s skills and knowledge through an extended literature project.

**Intended Learning Outcomes**

**Subject knowledge:** *at the end of this module students should:*

- Be able to write comprehensive scientific reports aimed at a scientific audience.  
- Be able to present scientific information in a clear and concise fashion.  
- Be able to summarise the important points of a number of related research papers and make suggestions for further work in that area.  
- Be able to use appropriate resources, including computer databases to find out information about a particular area of research, *e.g.* Web of Knowledge, Crossfire.  
- Be able to plan a research project, setting shorter and longer term goals.  
- Be able to assess the safety issues of the work they are doing.  
- Be able to carry out a number of advanced experimental procedures.  
- Be able to purify and analyse chemical products using a variety of methods.  
- Be able to take charge of their experiments and design them so that they can complete their tasks.  
- Be able to function as part of a team.  
- Be able to manage their time effectively.

**Key skills:** *at the end of this module students should be able to:*

- Record, analyse and present data in an appropriate format. Prepare a poster in an appropriate format.

**Methods:** Lectures, research laboratory work, formative and summative feedback on essay.  
**Assessment:** Practical (80%); Literature Exercise (20%)

**Other information:** Prerequisites: BSc or equivalent knowledge of practical techniques  
**Structure of module:** The literature exercise must be submitted by the end of Week 15
Module CH7061 (includes CH7062/63) MSc Research Project

Convenor: Prof. E. Hope

Course credits: 60

Aims: The aim of this module is to give students experience of doing research as part of an active research group within the Department. The module aims to teach or reinforce skills such as planning, organisation and record keeping, literature searching, practical laboratory skills, data analysis, report writing, oral presentation and teamwork.

Intended Learning Outcomes

Subject knowledge: at the end of this module students should:

- Have experience of doing research as part of an active research group within the department. The module aims to teach or reinforce skills such as planning, organisation and record keeping, literature searching, practical laboratory skills, data analysis, report writing and oral presentation skills.
- The first part of the project will involve the practical, experimental part of the project.
- The second part involves the data analysis, writing a report, including a summary of the relevant literature.
- The third part involves giving an oral presentation on your research and a full oral examination.

Key skills: at the end of this module students should be able to:

Obtain new information from textbooks, describe relevant chemistry and discuss it with peers and teachers, solve problems.

Methods: Laboratory work, written exercises, report writing, oral presentation.

Assessment: Experimental (practical competence, initiative, commitment, organisation) - 50%;
Dissertation - 30%;
Oral (presentation, viva) - 20%.

Other information: Prerequisites: Satisfactory progress in taught modules (failure (<50%) in ≥ 60 credits)

Structure of modules:

The first sixteen weeks (weeks 27-44) involve the practical and experimental part of the project. The final four weeks (45-48) involves the data analysis, writing a report, including a summary of the relevant literature [modified version of literature survey (CH7052)]. This will be followed by an oral presentation and an oral examination on the subject of the research project.

Students should have provided some direct input into the course of the project, both on a day-to-day basis and with regard to the longer term aims.

You should hand in two bound copies of your dissertation to the front office by Friday 25th August 2017. There will be binding facilities available for student use before this time. One copy of your dissertation will be returned to you after it has been assessed.
17. Experimental Work

General Laboratory Work

Wear safety glasses and protective clothing at all times in the laboratory.

Use gloves where necessary, but do not handle any apparatus (especially communal apparatus) with contaminated gloves and remember to wash gloves in soap and water before removing them.

Use a fume cupboard where appropriate. Discuss safety precautions with your supervisor or a demonstrator before working with materials which may pose any hazard to you or to others.

All hazardous materials should be stored safely and waste material disposed of properly. Waste solvents should go into the correct waste solvent residues bottle. Chemicals should only go down the sink if they have been made safe. Toxic materials should be disposed of according to recognised procedures (see manufacturer’s recommendations). Do not dispose of smelly or toxic materials in the open laboratory.

Before starting an experiment make sure you are clear about:

The aim and scale of the experiment and the correct apparatus for the job.

The correct procedures for operating equipment, e.g. spectrometers.

The properties of the reagents, solvents and products (as far as possible) in the interests of safety (using agreed written risk assessment procedures).

The properties of the reagents and solvents involved to ensure that appropriate experimental conditions are chosen (e.g. dry conditions/inert atmosphere for water-sensitive materials).

The full literature procedure (for known experiments).

How to work up the reaction and isolate the product.

How to deal with any accidental spillage and how to dispose safely of any unwanted residues.

Remember: if in doubt, ask!

Day-to-day writing up and recording of spectroscopic data

Use a hard-backed notebook for laboratory use and have it in the laboratory at all times. Write down all relevant information (see below) at the time. Do not use filter papers and other scraps of paper for recording data and don't try to carry information in your memory to 'write up later'. Your laboratory notebook need not be a work of art (it is a working notebook), but it should be legible to any reader. You should hand in your lab notebook along with any spectra or other raw data as an appendix to your report (see later).

Note the date at the start of each new day and record what you plan to do and why. (Experiments may be repeated [for a specific reason] and the conditions may vary).

Record important information as discussed above.

Note if any other data is acquired e.g. an NMR spectrum: give each spectrum a code number and record this in your notebook.
18. MSc Research Project Dissertation (CH7061)

This section offers some guidelines regarding length and format of the dissertation. No scheme will be equally appropriate to all projects; however, the following is a useful general guide. You should aim the dissertation at a chemically-aware reader but you should not assume specialist knowledge which you have learnt during the project.

The Project Report

The report should be word processed according to the following criteria:

Pages should be numbered.

The setting for margins should be: top and bottom 2.00cm; left margin 2.5cm; right margin 1.5cm using 12pt Times Roman font and 1.5 line spacing.

Paragraphs have the first line indented by 1.00cm but are not separated by a blank line.

Citations of references and any notes should be represented in the text by superscripted numbers. The list of references and notes appears at the end of the text under the major heading 'REFERENCES'.

The reference list has a hanging indent of 1.00cm.

Chemical structure diagrams should be drawn using ChemDraw which is available on the Network.

Guidelines on length

<table>
<thead>
<tr>
<th>Section</th>
<th>Suggested Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>less than 1 side</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>12-15 sides* (inc. diagrams)</td>
</tr>
<tr>
<td>RESULTS AND DISCUSSION</td>
<td>18-35 sides (inc. diagrams)</td>
</tr>
<tr>
<td>EXPERIMENTAL</td>
<td>10-15 sides</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>see below</td>
</tr>
<tr>
<td>Suggested length</td>
<td>40-70 sides (inc. diagrams)</td>
</tr>
</tbody>
</table>

Reports that exceed this upper limit will have marks deducted. It is important that you learn to write concisely.

Abstract

This should be a summary of less than one side.

Introduction

This section should include a clear statement of the aims of the project. It should also contain a summary of relevant work that has already been published so that the project work can be put in context. Your supervisor will have told you of some relevant papers to read but you must augment these with your own search of the literature.

Results and Discussion

A description and discussion of what you did (but without experimental detail unless this is crucial); distinguish between important information, which needs to be in this section, and routine data which belongs in the experimental section. A block diagram of key equipment is often valuable for technique-based projects. Describe the results obtained and the proposed implications thereof. Where appropriate, give an indication of how you identified products and proved the proposed structures (including key spectroscopic data and explanations where necessary, but not routine data). A summary of your conclusions and recommendations for future work (especially the work you would like to do next if you had the time!) should be included.
The results section should not generally include the raw data e.g. spectra, unless absolutely essential. The raw data should be analysed and the resulting information reported e.g. for NMR spectra the chemical shift values should be reported but the actual spectrum does not need to be bound into the report; for kinetics projects, a plot of the experimental points would be expected but not a copy of each spectrum from which the information was obtained. Nevertheless, all the raw data and your laboratory notebook should be presented as an appendix (usually in a separate envelope folder or perhaps on disc if more appropriate). This allows the sources of derived parameters such as rate constants, equilibrium constants etc. to be available to the reader. The key steps in derivation of these parameters should be explained carefully with any assumptions being clearly indicated. Take care to define all terms and symbols and use proper units and dimensions. Where experiments produce quantitative data you should comment on their statistical significance e.g. precision and accuracy and sources of errors.

All compounds and spectra should be numbered for ease of reference.

**Experimental**

Write a clear, complete and concise account of your experimental work. If you found it necessary to repeat a reaction a number of times, write out the procedure in the most successful case and comment on (or if necessary, tabulate) variations in conditions/results in other cases. Avoid unnecessary repetition.

Include all the data necessary to report your work, *i.e.* weights, volumes, yields, reaction times, temperatures, purity of reagents, m.p., b.p., etc. Where appropriate, quote literature data on known compounds for comparison or compare measured quantities *e.g.* enthalpies, emfs with published data.

**References**

The number of references may vary considerably for each project *e.g.* in a relatively new area there may not be many references whereas for a well-established area there may be many more. Some areas may be well reviewed in the literature thereby reducing the number of individual references that need to be cited. You will be asked questions about the literature in your oral exam.

Number literature references as they appear in the text. List these at the end of your report using accepted abbreviations for journal titles, (see instructions for authors in RSC journals), *e.g.*

Authors' names (initials, surname), journal abbreviation (in italics), year, volume number (in bold), starting page number,


**Oral Exam**

The oral exam will test your understanding of the research you have done in your project, including relevant literature, as well as background theory. **You may well be asked questions to which you do not know the answer, you will often be prompted to think about the problem and suggest a possible answer. Not knowing the answers to some questions does not necessarily mean you will do poorly.**