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Cover image:
Confocal micrograph of fluorescently labelled HeLa cells.
Nuclei are labelled in blue, tubulin in green and actin fibres in red.

Courtesy of:
Kevin Mackenzie
Microscopy and Histology Core Facility
Institute of Medical Sciences
University of Aberdeen
http://www.abdn.ac.uk/ims/microscopy-histology
Course Summary

This course will challenge students to think about the nature of research when driven by commercial outcomes. Many of the future recruitment opportunities for students with medical science skills may involve roles in bio-business development rather than exclusively research at the bench. This course hopes to enable our students to be at a competitive advantage when seeking such career opportunities when compared to those students that only have a traditional scientific background.

Course Aims & Learning Outcomes

At the end of the course the student will:

1. Have acquired factual and up to date knowledge of the key terminology and methodology associated with the successful delivery of drug development.
2. Understand that in this environment outcomes are strongly influenced by commercial deliverables rather than the quality of the science.
3. Gain insight into the way risk and cost is managed against the very large potential revenues that could be generated from a successful drug pipeline.
4. Understand the process of commercialisation of scientific ideas

Course Teaching Staff

Course Co-ordinator(s):
Professor Heather M. Wallace (ext. 7956) h.m.wallace@abdn.ac.uk

Other Staff:
- Professor Iain Gibson (IGib), IMS
- Dr Iain Greig (IGre), Kosterlitz Centre
- Professor Andrew Porter, (AJP), IMS

Assessments & Examinations

Hand-in Dates

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Hand-in Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essay 1</td>
<td>27th February 2019</td>
</tr>
<tr>
<td>Essay 2</td>
<td>20th March 2019</td>
</tr>
<tr>
<td>Presentation</td>
<td>27th March 2019</td>
</tr>
</tbody>
</table>
Class Representatives

We value students’ opinions in regard to enhancing the quality of teaching and its delivery; therefore in conjunction with the Students’ Association we support the Class Representative system.

In the School of Medicine, Medical Sciences and Nutrition we operate a system of course representatives, who are elected from within each course. Any student registered within a course that wishes to represent a given group of students can stand for election as a class representative. You will be informed when the elections for class representative will take place.

What will it involve?

It will involve speaking to your fellow students about the course you represent. This can include any comments that they may have. You will attend a Staff-Student Liaison Committee and you should represent the views and concerns of the students within this meeting. As a representative you will also be able to contribute to the agenda. You will then feedback to the students after this meeting with any actions that are being taken.

Training

Training for class representatives will be run by the Students Association. Training will take place within each half-session. For more information about the Class representative system visit www.ausa.org.uk or email the VP Education & Employability vped@abdn.ac.uk. Class representatives are also eligible to undertake the STAR (Students Taking Active Roles) Award with further information about this co-curricular award being available at: www.abdn.ac.uk/careers.

Problems with Coursework

If students have difficulties with any part of the course that they cannot cope with alone they should notify the course coordinator immediately. If the problem relates to the subject matter general advice would be to contact the member of staff who is teaching that part of the course. Students with registered disabilities should contact Mrs Jenna Reynolds (medsci@abdn.ac.uk) in the School Office (based in the IMS, Foresterhill), or Mrs Sheila Jones (s.jones@abdn.ac.uk) in the Old Aberdeen office associated with the teaching laboratories, to ensure that the appropriate facilities have been made available. Otherwise, you are strongly encouraged to contact any of the following as you see appropriate:

- Course student representatives
- Course co-ordinator
- Convenor of the Medical Sciences Staff/Student Liaison Committee (Prof Gordon McEwan)
- Personal Tutor
- Medical Sciences Disabilities Co-ordinator (Dr Derryck Shewan)

All staff are based at Foresterhill and we strongly encourage the use of email or telephone the Medical Sciences Office. You may have a wasted journey travelling to Foresterhill only to find staff unavailable.
If a course has been completed and students are no longer on campus (i.e work from second semester during the summer vacation), coursework will be kept until the end of Freshers’ Week, during the new academic year. After that point, unclaimed student work will be securely destroyed.

**Course Reading List**
Staff will recommend relevant reading/resources as required throughout the course.

**Lecture Synopsis**

**Lecture 1.**  Introduction to the course - Professor Heather Wallace

Introduction to the course and explanation of the assessments.

**Lectures 2.**  Drug Discovery Process 1 - Professor Heather Wallace

Overview of how the drug discovery process works

**Lecture 3.**  Biotechnology Business - Professor Iain Gibson

Case Study of setting up a biotech company as a spin-out from a University.

**Lecture 4.**  The Moral Dilemma - Dr Iain Greig

Medicines should be available for everyone who needs them and not just the rich – but a pharmaceutical company is expected by its shareholders to maximise profit...this leads to conflict

**Lecture 5.**  The Drug Discovery Process 2 – Professor Heather Wallace

The drug discovery process

**Lecture 6.**  The Drug Discovery Process 3 – Professor Heather Wallace

The drug development process

**Lecture 7.**  Big Pharma Business Model - Professor Heather Wallace

How the pharmaceutical industry works

**Lecture 8.**  Entrepreneurial Business – Professor Andrew Porter
Lecture 9.  IP and IP strategies – Professor Andrew Porter

IP; how and what to protect

Lecture 10.  Generics and Biosimilars - Professor Heather Wallace

Description of generic and biosimilar business

Lecture 11.  Mission Statements – Professor Heather Wallace

Description and discussion of mission statements

Lecture 12.  What makes a winner? - Dr Iain Greig

Whether it is you, your company, or your product, there will always be winners and losers: what determines on which side of the line you fall?

Lecture 13.  Commercialisation – Professor Andrew Porter

Practical/Lab/Tutorial Work

There is no practical work for this course.
University Policies

Students are asked to make themselves familiar with the information on key institutional policies which been made available within MyAberdeen (https://abdn.blackboard.com/bbcswbav/institution/Policies). These policies are relevant to all students and will be useful to you throughout your studies. They contain important information and address issues such as what to do if you are absent, how to raise an appeal or a complaint and how seriously the University takes your feedback.

These institutional policies should be read in conjunction with this programme and/or course handbook, in which School and College specific policies are detailed. Further information can be found on the University's Infohub webpage or by visiting the Infohub.

The information included in the institutional area for 2018/19 includes the following:

- Absence
- Academic Appeals & Complaints
- Assessment (Common Grading Scale)
- Codes of Practice on Student Discipline (Academic and Non-Academic)
- Class Certificates
- Exam Results
- Transcripts
- MyAberdeen
- TurnitinUK
- Feedback
- Communication
- Aberdeen Graduate Attributes
- The Co-Curriculum
### Medical Sciences Common Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade Point</th>
<th>% Mark</th>
<th>Category</th>
<th>Honours Class</th>
<th>Description</th>
</tr>
</thead>
</table>
| A1    | 22          | 90-100 | Excellent    | First         | • Outstanding ability and critical thought  
• Evidence of extensive reading  
• Superior understanding  
• The best performance that can be expected from a student at this level |
| A2    | 21          | 85-89  |              |               |             |
| A3    | 20          | 80-84  |              |               |             |
| A4    | 19          | 75-79  |              |               |             |
| A5    | 18          | 70-74  |              |               |             |
| B1    | 17          | 67-69  | Very Good    | Upper Second  | • Able to argue logically and organise answers well  
• Shows a thorough grasp of concepts  
• Good use of examples to illustrate points and justify arguments  
• Evidence of reading and wide appreciation of subject |
| B2    | 16          | 64-66  |              |               |             |
| B3    | 15          | 60-63  |              |               |             |
| C1    | 14          | 57-59  | Good         | Lower Second  | • Repetition of lecture notes without evidence of further appreciation of subject  
• Lacking illustrative examples and originality  
• Basic level of understanding |
| C2    | 13          | 54-56  |              |               |             |
| C3    | 12          | 50-53  |              |               |             |
| D1    | 11          | 47-49  | Pass         | Third         | • Limited ability to argue logically and organise answers  
• Failure to develop or illustrate points  
• The minimum level of performance required for a student to be awarded a pass |
| D2    | 10          | 44-46  |              |               |             |
| D3    | 9           | 40-43  |              |               |             |
| E1    | 8           | 37-39  | Fail         | Fail          | • Weak presentation  
• Tendency to irrelevance  
• Some attempt at an answer but seriously lacking in content and/or ability to organise thoughts |
| E2    | 7           | 34-36  |              |               |             |
| E3    | 6           | 30-33  |              |               |             |
| F1    | 5           | 26-29  | Clear Fail   | Not used for Honours | • Contains major errors or misconceptions  
• Poor presentation |
| F2    | 4           | 21-25  |              |               |             |
| F3    | 3           | 16-20  |              |               |             |
| G1    | 2           | 11-15  | Clear Fail/Abysmal | - | • Token or no submission |
| G2    | 1           | 1-10   |              |               |             |
| G3    | 0           | 0      |              |               |             |
## BT3502 Course Timetable: 2018-19

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Room</th>
<th>Title</th>
<th>Session</th>
<th>Staff</th>
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<tbody>
<tr>
<td>Mon 21 Jan</td>
<td>12:00-14:00</td>
<td>1M:001</td>
<td>Introduction to course</td>
<td>Lecture</td>
<td>HMW</td>
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<tr>
<td>Wed 23 Jan</td>
<td>14:00-15:00</td>
<td>1:155/56</td>
<td>Drug Discovery process 1</td>
<td>Lecture</td>
<td>HMW</td>
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<tr>
<td>Wed 30 Jan</td>
<td>13:00-14:00</td>
<td>1:155/56</td>
<td>Biotechnology Business</td>
<td>Lecture</td>
<td>IGib</td>
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<td>14:00-15:00</td>
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<td>The Moral Dilemma</td>
<td>Lecture</td>
<td>IGre</td>
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<tr>
<td>Mon 11 Feb</td>
<td>12:00-13:00</td>
<td>1.143/44</td>
<td>Drug Discovery process 2</td>
<td>Lecture</td>
<td>HMW</td>
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<td>Wed 13 Feb</td>
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<td>1:155/56</td>
<td>Drug Discovery Process 3</td>
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<td>Big Pharma Business Model</td>
<td>Lecture</td>
<td>HMW</td>
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<tr>
<td>Wed 20 Feb</td>
<td>13:00-14:00</td>
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<td>Entrepreneurial business</td>
<td>Lecture</td>
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<td>Mon 25 Feb</td>
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<td>IP and IP strategies</td>
<td>Lecture</td>
<td>AJP</td>
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<tr>
<td>Wed 27 Feb</td>
<td>14:00-16:00</td>
<td>1M:001</td>
<td>Assignment 1 essay under examination conditions</td>
<td>Assessment</td>
<td>HMW/IGib</td>
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<td>Mon 4 Mar</td>
<td>11:00-12:00</td>
<td>1:154</td>
<td>Generics and Biosimilars</td>
<td>Lecture</td>
<td>HMW</td>
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<tr>
<td>Wed 6 Mar</td>
<td>14:00-15:00</td>
<td>1:155/56</td>
<td>Mission statements</td>
<td>Lecture</td>
<td>HMW</td>
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<tr>
<td>Mon 11 Mar</td>
<td>13:00-14:00</td>
<td>1:147</td>
<td>What makes a winner?</td>
<td>Lecture</td>
<td>IGre</td>
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<tr>
<td>Wed 13 Mar</td>
<td>14:00-16:00</td>
<td>1:155/56</td>
<td>Commercialisation</td>
<td>Lecture</td>
<td>AJP</td>
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<tr>
<td>Wed 20 Mar</td>
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<td>1M:001</td>
<td>Assignment 2 essay under examination conditions</td>
<td>Assessment</td>
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<tr>
<td>Wed 27 Mar</td>
<td>13:00-16:00</td>
<td>1:032/3</td>
<td>Student Presentations and Review</td>
<td>Assessment</td>
<td>HMW/IGib/AJP/IGre</td>
</tr>
</tbody>
</table>

### Staff

- Professor Heather M. Wallace (HMW) - Course Co-ordinator, IMS
- Professor Iain Gibson (IGib), IMS
- Professor Andrew Porter (AJP), IMS
- Dr Iain Greig (IGre), Kosterlitz Centre