MRes in Systems and Synthetic Biology

Institute of Systems and Synthetic Biology
Imperial College London, London
The Graduate School
Welcome from Professor Sue Gibson, Director of the Graduate School

The Graduate School has several roles but our main functions are to provide a broad, effective and innovative range of professional skills development courses and to facilitate interdisciplinary interactions by providing opportunity for students to meet at academic and social events. Whether you wish to pursue a career in academia, industry or something else, professional skills development training will improve your personal impact and will help you to become a productive and successful researcher.

Professional skills courses for Master’s students are called “Masterclasses” and they cover a range of themes, for example, presentation skills, academic writing and leadership skills (http://www.imperial.ac.uk/study/pg/graduate-school/professional-skills/masters/). All Masterclasses are free of charge to Imperial Master’s students and I would encourage you to take as many as you can to supplement your academic training. The Graduate School works closely with the Graduate Students’ Union (GSU) and is keen to respond to student needs so if there is an area of skills training, or an activity that you would like us to offer, but which is not currently provided, please do get in touch (graduate.school@imperial.ac.uk).

The Graduate School also runs a number of exciting social events throughout the year which are an opportunity to broaden your knowledge as well as to meet other students and have fun. Particular highlights include the Ig Nobel Awards Tour Show, the Chemistry Show and the 3 minute thesis competition. You should regularly check the Graduate School’s website and e-Newsletters to keep up to date with all the events and training courses available to you.

Finally, I hope that you enjoy your studies here at Imperial, and I wish you well.

Sue Gibson
I would like to welcome you to the graduate school courses for postgraduate professional development. The team of tutors here come from a wide variety of experiences and we understand just how important it is to develop professional skills whilst undertaking postgraduate studies and research. Not only will this development improve success during your time at Imperial College, but it will also prepare you for your future careers. We are continually working to develop and innovate the courses we offer and over this year you will see many new offerings both face to face and online. I encourage you to explore and engage with the diverse range of opportunities on offer from the team at the graduate school and I wish you well in your studies.

Janet De Wilde
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Information

Important Course Deadlines:

Events in the first couple of weeks:

*Timetabled lectures and classes for the course run throughout the Autumn term. A detailed timetable will be provided separately*

Important Course Deadlines:

- Dates of the M1-M5 coursework deadlines for the Autumn term are listed on the detailed timetable provided separately.
- January: Mock grant research proposal deadline
- August: Research project deadline

- Dates of the M1-M5 coursework deadlines for the Autumn term are listed on the detailed timetable provided separately.
- January: Mock grant research proposal deadline
- Mid-Late August: Research project deadline

New Students Website
You are reminded of the following website that contains relevant information for all new students: www.imperial.ac.uk/newstudents

International Students
http://www3.imperial.ac.uk/students/international

English Language Support
http://www3.imperial.ac.uk/humanities/englishlanguagesupport

General Welfare
http://www3.imperial.ac.uk/students/welfareandadvice

The Student Union
http://www.imperialcollegeunion.org/

The Student Union is particularly keen to engage the postgraduate students in these events as part of a broader effort to do more to support this expanding population.

Graduate Student Union:
https://www.imperialcollegeunion.org/faculty-unions/gsaweb/index,457,ICS.html

A timetable of the College welcome events can be found here:
http://www3.imperial.ac.uk/students/newstudents/yourfirstweek/welcomeweekpg
Communication

Once you have registered at College you will be provided with access to College teaching computers via your IC login. This will also provide you with an Imperial College email account. It is imperative that you use your Imperial College email as we will always communicate to you via this account and it is your responsibility to check it on a daily basis.

Contacts

Those responsible for the general organisation of the course

Mrs. Lucy Barron (Postgraduate Administrator)  
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Ms. Tania Briggs (Admissions)  
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Important websites and links:

Blackboard (booklet, time table, course material):  
http://bb.imperial.ac.uk

General E-learning Resources:  
http://www.imperial.ac.uk/admin-services/ict/self-service/teaching-learning/elearning-services/

Success Guide  
https://www.imperial.ac.uk/students/success-guide/

CISBIO:  
http://www3.imperial.ac.uk/cisbio

Synthetic Biology Hub:  
http://www3.imperial.ac.uk/synthetic-biology

Institute of Systems and Synthetic Biology:  
http://www.imperial.ac.uk/systems-biology

Imperial Study Guide / Imperial Study Guide for Master’s Students:  
http://www3.imperial.ac.uk/students/studyguide

MRes Code of Practice:  

Information about the Graduate School:  
http://www3.imperial.ac.uk/graduateschools
Imperial College Principles

Imperial College London embodies and delivers world class scholarship, education and research in science, engineering, medicine and business, with particular regard to their application in industry, commerce and healthcare. The College is diverse and international - it comprises academic staff, students and support staff of varied disciplines and backgrounds. It encourages collaboration, actively opposes discrimination and recognises the importance of making a positive impact in the wider community.

Course synopsis:

Systems biology aims to quantitatively describe and predict the behaviour of biological processes at the molecular, network, and organ level, whereas synthetic biology aims to apply such understanding to the development of biotechnology and molecular medicine. Advances in understanding biomolecular processes have often depended on the collaborative efforts of biochemists, chemists and physicists. To foster collaborative work, the Centre for Integrative Systems Biology and Bioinformatics (CISBIO) and the Centre for Synthetic Biology and Innovation (CSynBI) were established. To better connect the College’s activities in these highly interdisciplinary research areas with industry and medicine, the Institute of Systems and Synthetic Biology at Imperial College was launched as a college-wide enterprise. This course, run by the Department of Life Sciences and the Department of Bioengineering, enables students to bridge the gap that can exist between the physical and life sciences because of differences in ‘language’, perspective and methodology. The course consists of an 8-month multidisciplinary research project, as well as taught modules in advanced molecular biology, genetics, biophysics, systems biology, physiological systems, advanced imaging technology, data analysis, bioengineering, and synthetic biology. Furthermore, specialist lectures in transferable skills and group discussion sessions complete the comprehensive curriculum.

Introduction

Biological systems are made up of huge numbers of different components (molecules, cells, organisms) interacting at various scales. In the past, measurements of these were expensive and time consuming, so that most scientists could only study a handful of such components at a time. This led to an approach where a single event was assumed to result in a single effect, which in turn initiated a further effect, and so on in a simple chain of cause and effect. In reality, however, most genes, proteins and other components carry out their functions within a complex network of
interactions. Typical networks have positive and negative feedback loops that regulate their operation. Consequently, a single component (such as a gene) rarely controls any particular biological function or disease, and conversely any given component may influence many different functions.

Such a simple cause and effect framework imposes a severe handicap as we try to understand, manipulate and design increasingly complex biological systems. Systems and Synthetic Biology are emerging fields of research that are revolutionizing our approach to many of the most challenging problems in the life sciences today. Systems Biology tightly couples state-of-the-art biological measurements with sophisticated mathematical and computational modelling in order to understand and predict how networks of interactions between components of a biological system give rise to its observed properties. Synthetic Biology builds on this foundation to provide tools for the rational engineering design and synthesis of biological devices and systems that display predictable functional behaviour.

Synthetic and Systems Biology are most powerful in combination. While Systems Biology aims for a quantitative and predictive understanding of biological networks, its full potential is only achieved when this understanding is applied to redesign and combine pathways in a modular fashion to build something new. This new application may be a microbe, which produces more hydrogen, hunts down cancer cells in the human body, or produces a drug. Hence, the results of these fields of research are expected to have significant impacts not only in fundamental bioscience, but also in medicine and biotechnology.

To strategically place Imperial College into the emerging field of Systems Biology, the Centre for Integrative Systems Biology and Bioinformatics (CISBIO) was established in 2005, mainly funded by BBSRC and EPSRC with a £6.5M award. A recent BBSRC Systems Approaches to Biological Research (SABR) £5.6M grant jointly with Aberdeen has further strengthened this theme. Several new Faculty have successfully been recruited and an active Imperial network of multidisciplinary research combining theory, computer modelling, and experiments are underway. CISBIO’s efforts mainly deal with understanding and predicting cellular and sub-cellular processes. However, it was recognised that the Systems Biology approach also applies at higher levels including tissue, organs, and whole organisms, and that systems biology can provide solutions to biotechnological and biomedical problems. In response, the Centre for Synthetic Biology and Innovation (CSynBI) was recently opened with a £4.9M award from EPSRC. This centre places Imperial College in the emerging field of Synthetic Biology and to capitalise on both industrial and research council funding opportunities.

To better connect the College’s activities in these highly interdisciplinary research areas with industry and medicine, the Institute of Systems and Synthetic Biology at Imperial College was launched as a college-wide enterprise. The Institute covers all four Faculties – Natural Sciences, Medicine, Engineering and the Business School. The Institute is made up of a number of centres and groups, with the Institute acting as a coordinating body to bring these groups together to enhance interaction and promote new training programs. The new Institute provides the College with an excellent focus for college-wide research and training as well as funding opportunities with industry and granting agencies. Although the MRes will be administered within the Department of Life Sciences, it will constitute one of the main teaching and training platforms of the Institute involving associates of the Institute from all four Faculties.

As Systems and Synthetic Biology are emerging fields that require a different type of trained researcher, i.e. interdisciplinary with basic skills and fundamental understandings of biosciences and the application of engineering and mathematical modelling, it is now timely to establish novel training programs that will equip the next generation of scientists with these necessary skills. The MRes in Systems and Synthetic Biology is an exciting and timely postgraduate training course, bringing together expertise from all over the College. This course produces highly trained and motivated scientists who are ideal candidates for research positions in both industrial and academic settings; indeed we have an excellent track record of placement for our graduates.
Aims and Objectives:
The aim of the proposed MRes is to provide graduate students from the Life Sciences, Engineering and Physical Sciences with a platform to overcome traditional barriers and collaboratively work on the ‘big problems’ and applications in Systems and Synthetic Biology. The MRes students gain intensive hands-on experience in a combination of experimental biology and modelling to understand, predict, and redesign biological pathways. In addition to a minimum set of conventional lectures, these objectives are achieved through active engagement by the students in the programme, i.e. through practicals, coursework, presentations, written proposals, group work and feedback sessions, seminars, and an 8-month long interdisciplinary research project. Assessment will be through a combination of assessed coursework assignments; presentations; reports and projects. Only these activities will be marked; there will not be any formal written exams. For further enrichment of the programme, connections to broader research will be provided through additional seminars and meetings.

Specifically the course will:

Provide knowledge in a wide range of modern scientific fields including genetics, imaging, data analysis, engineering design and modelling, biophysics, systems biology, physiological systems, bioengineering, and synthetic biology.

Provide hands-on experience through project work, computer practical, literature research, and oral presentations.

Offer a rich research training experience through multiple project supervisors with different expertise and disciplines.

Provide research training within cutting edge academic research groups.

Show how to succeed in modern interdisciplinary research, as well as prepare for future research employment.

Individuals who successfully complete the course will have:

Developed experience in communicating across traditional scientific borders, e.g. by appreciating different scientific cultures with their own styles and terminology.

Acquired solid research experience through one long project instead of several shorter projects.

Demonstrated flexibility through facilitating research between different supervisors and scientific cultures.

Performed cutting-edge research in the modern areas of Systems and Synthetic biology.

Acquired crucial transferable skills in writing, presenting, discussing scientific material.

Entrance requirement

The minimum qualification for admission is normally at least an Upper Second Class Honours degree in a Physical, Engineering, Mathematical, or Life/Biomedical Sciences-based subject from a UK academic institution or an equivalent overseas qualification. A-level mathematics or equivalent will generally be required for entry. Offers will be made to students by the Course Directors.
Curriculum

Course duration:
The programme is only offered as a **full-time**, one-year course and leads to the MRes degree.

Overview:
All students will be required to attend an introduction process during their first week, which will include registration; general orientation and guide to the main Imperial campuses; welcoming party (opportunity to meet with faculty, postdoctoral scientists and postgraduate students); library tour; essential briefings on health and safety and computing. The taught course will start with a welcome meeting to introduce Systems and Synthetic biology, along with an overview of the course, the participating Departments and Divisions, and faculty members.

Term 1 (Oct-Dec):
During weeks 1-11, all students will attend all Modules 1-5. The first module includes introductory courses in physical sciences/programming and in molecular/cell biology. These are taken by all students, but tailored toward biological and physical scientists, respectively. The remaining modules include lectures covering functional genetics, biophysics, systems biology, physiological systems, advanced technologies, data analysis, bioengineering, and synthetic biology. Each module will be assessed, either in case studies, computer problem solving, literature searches, written reports, or oral presentations. All these aspects require the students to actively engage in the programme, either working individually or in groups depending on the type of assessment.

Terms 2 (Jan - April) and 3 (May - September):
Student will choose one research project and at least two supervisors of different disciplines and expertise (see section “Project Selection”). The supervisors are most likely to be from within the College but could also involve a supervisor from industry. During their first 4 weeks of their research project, the students will undertake a literature review on their chosen project topic, and write a research proposal for examination (see section “Research Proposal”). These research proposals will be “evaluated” by student mock panels for early feedback prior to submission to the supervisors. The research projects will form the most important part of the MRes course and will be carried out in researchers laboratories, and along with enabling a taste of ‘cutting-edge’ research, these would highlight transferable skills such as oral presentations (frequent progress reports in lab meetings and student research meetings). It is expected that industrial collaborators will contribute to these research projects and students with such projects will also spend time in industrial labs and experience ‘real’ working environments. However, the majority of the project should be carried out within laboratories within the College. This will allow the students to remain in contact and meet regularly, maintain the communal spirit of the cohort engendered from the time of the taught modules, and to ensure that no one feels disengaged.

We also have contacts with social scientists working in the BIOS Centre at Kings College and there may be the opportunity to interact with students from this centre. Students must attend any extra events such as these which are timetabled as part of the MRes.

Early in the summer term (May), there will be a mini-conference with presentations (about 15min) from all students using PowerPoint. This is to ensure students are making progress and to provide for the opportunity for feedback and input into the project. Towards the end of August the project reports will be submitted for marking. Following this in September there will be viva voce (oral examinations) with internal examiners to assess the projects. There will also be vivas with our external examiners which must be attended by all students.
Modules:
There are five course modules. These modules constitute the common part of the course where students from diverse backgrounds come together and learn how to communicate across traditional scientific barriers, e.g. by working in mixed teams during the practicals. In particular Module 1 is designed to bring students from diverse backgrounds up to a comfort level where they start communicating and collaborating with each other. This transition will be eased by its two introductory courses taken by all students: Essentials for Life Scientists and Essentials for Physical Scientists. Specifically, Module 1 also contains a computer practical (using language Matlab), as well as a wet-lab practical. Although for some students the introductory courses will largely be repetition of already known material, the above mentioned interdisciplinary aspects will make the introductory courses beneficial to all students. It will also foster inter-student learning with all students attending the same introductory course but with very different backgrounds. The remaining modules will centre around systems and synthetic biology, augmented by the last module on advanced technologies and biotechnology.

Coursework:
Each module will be assessed by coursework, which may require solving problems on a computer, conducting a literature search, writing a report, or presenting findings in an oral presentation. The type of assessment will be supervised by the module convenor. A tutorial or Q&A session may guide the students further towards completing the requested tasks. Students can generally discuss work in groups but need to present their findings orally or in writing individually for marking.

Submission of Coursework
All coursework must be submitted both in hard copy and electronically to Lucy Barron (202, Sir Ernst Chain/Biochemistry Building). Coursework will be subjected to plagiarism checking.

Project selection:
During the Autumn term students will receive a list of potential projects. These will be of multidisciplinary character, and will fall either into the area of systems biology or into the area of synthetic biology. Multidisciplinary character of the project could mean that a theoretical project includes modelling of real data or explain how model predictions can be tested experimentally. The latter requires feedback from experimentalists approached by the student. For an experimental project, the report needs to outline potential modelling or analysis approaches. These need to be based on discussion with theorists to assess feasibility. Students will rank projects in order of preference. Finally, projects will be assigned to students by the course committee. We assign projects to minimise unhappiness, i.e. better to give two second choices than one first and one third choice, and will not usually assign more than one project student to a single supervisor. We note that in the past most students have had very successful and rewarding projects. The course committee’s decision is final. During terms 2 and 3, supervisors will be reminded that the final report will also need to demonstrate multidisciplinary character.

Research Proposal:
The research proposal consists of a 6-page document, written in BBSRC proposal style. The research proposal should describe the background to the project, make a scientific case for carrying it out, and state the goals against which the project will be assessed. Students should not forget that supervisors’ time is a resource, and that supervisors may be at conferences during part of the summer.

Research Report:
The report should be at a postgraduate level. The length of the reports should not exceed 50 word-processed pages, written in strictly enforced format. The content of the report should include an abstract, introduction and literature survey, aims consistent with the research proposal, results, multidisciplinary components, methods, and bibliography.
Overview:

Term breaks must be used by students for private study. Specifically, the Christmas break is intended for literature reading and project preparations.

Important Course Deadlines:
Dates of the M1-M5 coursework deadlines for the Autumn term will be provided with the detailed timetable.
**Project Supervisors:**
Each research project requires at least two supervisors with different expertise to maintain the interdisciplinary character during the full length of the project. Preference will be given to project proposers from the CISBIO and CSynBI centres. The research project can be a mixture of experiment and theory, only theory, or only experiment. One supervisor may also stem from industry.

**Representative Projects:**
The following list shows example project titles and supervisors. Some of the examples are based on on-going or planned research, but there will be many other new projects featuring new collaborations.

1. Using synthetic biology to create an *in vivo* directed evolution device to evolve new protein functionalities
   Supervisors: Dr Geoff Baldwin and Prof. Richard Kitney

2. Parasite protease detection using Synthetic Biology techniques – signal transduction via a two-component system
   Supervisors: Dr Geoff Baldwin and Professor Richard Kitney

3. Scalable ring oscillators with orthogonal TALE-repression
   Supervisors: Dr Tom Ellis and Professor Mauricio Barahona

4. GFR – Green Fluorescent RNA as a next-gen measurement tool
   Supervisors: Dr Tom Ellis and Professor Richard Kitney

5. How one cell eats another: analysing and interpreting video microscopy data of phagocytosis
   Supervisors: Dr Robert Endres and Professor Molly Stevens

6. Sporulation in *Bacillus subtilis*: a model for phagocytosis, aging, and development.
   Supervisors: Dr Robert Endres and Dr Brian Robertson

7. Parasite protease detection using Synthetic Biology techniques - a rapid Schistosoma Biosensor
   Supervisors: Professor Paul Freemont and Dr Tom Ellis

8. Designing Immobilised Molecular Machines for Catalytic Synthesis *In Vitro*
   Supervisors: Professor Paul Freemont and Dr Oscar Ces

   Supervisors: Professor Paul Freemont, Dr Guy-Bart Stan and Professor Richard Kitney

**Additional educational events:**
Although not required to pass the course, we highly recommend you attend extracurricular events and courses at Imperial College. Imperial provides a rich and stimulating environment, and we expect you to make the most of it. We recommend at least two Graduate School courses, ideally on writing and presentation skills, and the Synthetic Biology Symposium in November. There are a large number of talks and seminars around Imperial. Please make sure to be part of relevant email lists.

**Research seminars and colloquia**
Regular research seminars given by leaders in particular fields and include the CISBIO and Molecular Biosciences seminars, the bioinformatics seminar, as well as various divisional and departmental seminars. Students are expected to attend the CSynBI lab meetings which take place throughout the year. Other journal clubs also take place such as the, CISBIO and bioengineering-neuroscience journal club. Students may be asked to present at these events, which are ideal opportunities to develop
presentation skills, whilst encouraging scientific debate, and providing the opportunity to broaden scientific knowledge. Students are requested to get feedback on their ability to organise the presentation in a logical manner, the use of clear slides, the clarity of the presentation and its scientific content from the organisers.

**Professional Skills:**
Students will be trained in a wide range of transferable skills following exposure to the various teaching and learning aspects of the MRes course. Additionally, MRes students are recommended to take additional professional skills courses, offered by the Graduate School at Imperial College London. The online plagiarism awareness course is compulsory, and should be completed during the first term.

For more information on the courses available please see: [http://www3.imperial.ac.uk/graduateschool/currentstudents/professionalskillsmasters](http://www3.imperial.ac.uk/graduateschool/currentstudents/professionalskillsmasters)

A list of potential skills developed is as follows.

1. **Communicate effectively through oral presentations, computer processing and presentations, written reports and scientific publications** – via coursework and developed through feedback on assessed reports and oral presentations. A short workshop on scientific writing is planned. To practise oral presentations, students present one case study orally, as well as participate in weekly lab meetings and student journal clubs. In the latter, students can present papers related to their research project or deliver progress reports to obtain feedback from their fellow students. Towards the end of term 3, students will organize a mini conference where they can present posters and talks on their work.

2. **Management skills: decision processes, objective criteria, problem definition, project design and evaluation, risk management, teamwork and coordination** – via the group projects and the research project and regular meetings with research teams.

3. **Integrate and evaluate information from a variety of sources** – via literature reviews as part of their case studies, research proposal, journal clubs, and research project.

4. **Transfer techniques and solutions from one discipline to another** – is a core activity of the research projects and is additionally taught in lectures.

5. **Use information and communications technology** – taught in lectures, developed through project work and individual learning.

6. **Manage resources and time.**

7. **Learn independently with open-mindedness and critical enquiry.**
Course modules

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<td>Introduction to modelling in biology; Matlab computer practical</td>
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<tr>
<td>M 1b  Essentials for physical scientists</td>
<td>Introduction to molecular and cell biology; wet-lab practical</td>
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<tr>
<td>M 2  Experimental systems biology</td>
<td>Signalling pathways and cellular programmes in bacteria, mammalian cells, and plants.</td>
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<tr>
<td>M 3  Theoretical systems biology</td>
<td>Modelling of dynamical systems and networks using deterministic and stochastic approaches, control theory, cell mechanics, and statistics.</td>
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<tr>
<td>M 4  Synthetic biology</td>
<td>Engineering design strategies to biological systems for application in health and industry, engineering blocks, standardisation, 'biobricks' and parts; social, ethical and policy issues</td>
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<tr>
<td>M 5  Advanced technology</td>
<td>Imaging and high-throughput techniques, and their analysis</td>
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Description of Module 1a – Essentials for life scientists

This short lecture course introduces the basics of modelling and theoretical analysis, tailored towards students from the life sciences with limited theoretical background. In particular, lectures will cover differential equations and stochastic simulations.

Computer practical - the programming Matlab package will be introduced. Emphasis will be put on learning by examples. Students will learn how to read data files, analyse data, fit models to data, plot graphs, print to output files, and how to implement simple dynamical models. The latter will focus on ordinary differential equations.

Description of Module 1b – Essentials for physical scientists

Overview:
This short lecture/tutorial course will provide an introduction to life sciences, tailored towards students from the physical sciences. Lectures will discuss aspects of molecular biology and information flow within a biological context (DNA, RNA, proteins, transcription and translation). An overview of some experimental techniques (cloning, PCR) will be provided. In addition to the basic introduction to biology some insight will be provided into up-to-date DNA assembly methods which have applications in synthetic biology and will be of interest to students with life science backgrounds.

Hands-on experience in basic experimental techniques will be provided. The practical will explore new techniques in DNA assembly.
Description of Module 2 – Experimental systems biology
Lectures will cover signalling and gene regulatory pathways and programmes in bacteria, mammalian cells and plants. Further topics of the lectures will include structural and functional genomics, and experimental techniques. Molecular medicine and genetic aspects of health and disease will be mentioned as well.

Description of Module 3 – Theoretical systems biology
This lecture course will cover various modelling techniques. Specifically, lectures will cover dynamical systems, networks, deterministic differential equations, stochastic simulations, control theory, biophysics and cell mechanics, as well as statistical approaches, such as Bayesian inference.

Description of Module 4 – Synthetic Biology
Topics of module range from biological building blocks and their characterization as, e.g. input/output relations, filters, amplifiers, robustness, as well as control theory, metabolic flux analysis, and genetic engineering. Additionally, this module will address social, ethical and policy issues, such as how is science linked to society, biology in the political context, social challenges, governance and regulation.

Description of Module 5 – Advanced Technology & Biotechnology
This short lecture course will cover imaging and high-throughput technologies. Imaging techniques include various forms of fluorescence microscopy, and high-throughput techniques such as RNAi screens, microarrays, and microfluidic devices.

Management

A management team chaired by the Course Directors will oversee the course. Individual team members will take responsibility for different aspects of course management (see below).

The members of the management team are:

<table>
<thead>
<tr>
<th>Course Directors</th>
<th>Dr. James Murray (Chair)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dept. Life Sciences</td>
</tr>
<tr>
<td></td>
<td>Prof. Paul Freemont (Co-Director)</td>
</tr>
<tr>
<td></td>
<td>Dept. of Medicine</td>
</tr>
<tr>
<td></td>
<td>Prof. Richard Kitney (Co-Director)</td>
</tr>
<tr>
<td></td>
<td>Department of Bioengineering</td>
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</table>

<table>
<thead>
<tr>
<th>Postgraduate Administrator</th>
<th>Lucy Barron</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><a href="mailto:l.barron@imperial.ac.uk">l.barron@imperial.ac.uk</a></td>
</tr>
<tr>
<td></td>
<td>Department of Life Sciences</td>
</tr>
</tbody>
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<table>
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<tr>
<th>Admissions</th>
<th>Ms. Tania Briggs</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Administrator, IoSSB</td>
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<tr>
<th>Safety</th>
<th>Mr Stefan Hoyle</th>
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<tbody>
<tr>
<td></td>
<td>Faculty of Natural Sciences</td>
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<table>
<thead>
<tr>
<th>Chair of Exam Board:</th>
<th>Dr Geoff Baldwin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Department of Life Sciences</td>
</tr>
</tbody>
</table>

The Exam Board will comprise Dr. Murray; Dr Baldwin; Prof. Kitney; Prof. Freemont and the External Examiners.
Student responsibilities

The MRes course is a postgraduate assignment and as such is not following undergraduate timing. There is no free time during term in this course. Students should be aware that bursaries are paid for a full-time employment up to the end of September 2017. Any holidays or sick-leave will have to be taken at the discretion of the supervisors, but should under no circumstances be taken in the examination period of September 2017.

It is mandatory to attend all scheduled lectures, practicals, and exemplar case studies. Missing such events without any support of documented mitigating circumstances for the day of the event can lead to disqualification from the course. Any illness occurring in the preparation time towards examination times and deadlines cannot be taken into account. It is the responsibility of the student to ensure that sufficient time is allocated for write-up preparation. If illness prevents a student from attending courses or performing their project then it is their responsibility to inform the module convenor, project supervisor and course Directors as soon as possible.

First contact in case of problems with the project supervisors are the course Directors. The course administrators will be the point of contact for all administrative or logistic issues.

Students are expected to organise, conduct and present their research project in an independent fashion. The supervisory role is to guide and advise the student intellectually as well as technically, but it is not the supervisor’s responsibility to do the thinking or the work for the student. All projects will have at least two supervisors of different expertise, ideally one with biological and one with physical/mathematical/computational expertise. Both supervisors should be approached for guidance. It is the students’ responsibility to make an effort and seek contact with their supervisors on a regular basis.

In order to pass the course successfully students have to pass all assessed components of the course. This includes the combine coursework mark for the modules and proposal as well as the final project report and the viva. Failing in one of the components could lead to a failure of the whole course.

At the end of the course an external examiner will assess the examination process. All students have to be present for this day, as they will need to attend a moderation viva with the external examiners. Students that are either at boundaries between marks (i.e. pass/failure or pass/distinction) or have failed one or more components of the course may have their mark moderated upwards as an outcome of the viva with the external examiners to determine their final mark.

Students should seek guidance with respect to their write-up of reports from their corresponding supervisors, since they will be involved in the marking. Specifically, after a first draft is written, they should seek feedback from their corresponding supervisors (biological and physical) to foster the improvement of their final report.

Students are required to submit an electronic version of the final report to their supervisors. Additionally, they must hand over all notes, lab-books, results, computer programmes etc to their supervisors.

A general Regulations-for-Students document can be found on the Registry website http://www3.imperial.ac.uk/registry/information/formsproceduresandregulations and students are expected to familiarise themselves with it.

In case of sickness, students are required to inform their supervisors (or the administrator or course directors) if they are absent from College for more than three days and to produce a medical certificate after 7 days if absence is due to illness. If illness prevents attendance for more than 7 days then it is the student’s responsibility to inform their supervisor and the course director immediately.
If there is reason to believe that a student’s state of health makes him/her unable to pursue his/her studies, or causes disruption to other members of the College, that he/she may be required to be assessed by the College Health Service. This regulation can be read in full in the above mentioned document.

**Late submissions:**
Material to be submitted must be typewritten, correctly formatted, bound, and provided in the correct number by the specified deadlines. An electronic version must also be submitted as well and this will be subject to plagiarism checks.

**All coursework and project reports, must be submitted by the designated deadlines. You must inform the Course Director and Administrator without delay if illness or other mitigating circumstances will prevent you from handing coursework in on time. Failure to do so will result in deduction of marks, normally 10% of the awarded mark per day.**

**Vivas:**
Students are responsible for contacting their two examiners end at the end of August to arrange a viva date after the project report has been handed in.

**Guidelines for preparing marked elements**

**Guidelines for module coursework**

Each of the five modules will be assessed by a piece of coursework with details depending on the module convenor. Students can generally discuss work in progress with their fellow students but need to individually present their findings for marking. For orally presented work, students generally need to prepare a short powerpoint-style presentation, explaining their findings and putting them in the correct context with background, methods and results. Presentations will be marked by a committee attending the presentations using proforma and assessment criteria for orally presented work, keeping to time is an important criteria. Written work will similarly require reviewing relevant literature, presentation of results, and the student’s own critical assessment of the findings. Such reports will generally be first and second marked using assessment criteria for written work. Reports must be submitted by hard copy and electronic copy. Reports may be screened for plagiarism.

**Guidelines for Research Proposal**

The purpose of the proposal is largely to test the student’s ability to work independently. The proposal should be at a postgraduate level, and consist of a 6-page document (including figures and up to 30 references) in BBSRC-proposal style (part 2 of Case of Support without the Previous research track record; minimum font size 11pt Arial, Helvetica or Verdana and margin 2 cm, single line spacing, https://je-s.rcuk.ac.uk/Handbook/Index.htm). You should also include an additional 1 page Diagrammatic workplan, which should be a Gantt chart (https://en.wikipedia.org/wiki/Gantt_chart) describing the timeline of the proposed work. So the final document should be 7 pages total.

The proposal should include an abstract, background and literature survey, and a proposal for the work to be carried out during the research project, contingency plans, and work organization and time planning, and a bibliography. Importantly, include estimates of the times required to fulfil the work packages or aims. Figures need to have proper captions, legends, and axis labelling with physical units.

**When preparing your proposal you should bear in mind the following:**

**Written style/Presentation**
- Is the proposal well-written and presented (typewritten, bound, organisational figures, formatting etc) and clearly explained?
• The report should be concise and complete (thorough and informative)
• Are the references listed actually referred to or discussed in the text? Is the abstract an accurate description of the contents?
• Is the proposal written in your own words?
• Is the format up to publication standard?

**Literature survey**
• Is the literature survey thorough and complete?
• Are important references missing?
• Are all relevant subjects (biological context and physical/technical aspects) sufficiently covered?
• A recitation of published material is not acceptable

**Analysis of literature**
• The student should show ability to compare and contrast the relevant literature in all subject areas.
• The student should present a coherent “story” throughout the report.
• Has the student made a good selection of material where choices exist or where the sources are voluminous?
• For a first class proposal, original input is expected

**Rationale of proposal**
• Is the proposed work’s relationship to other work in the literature clear?
• Aims and objectives should be clearly justified.
• Is the choice of methodology clear and is it justified?
• Do the two (or more) supervisors have clear relevance and oversight tasks?
• Are the expertise of the supervisors sufficiently different?
• IS THE WORK REALISTIC IN AVAILABLE TIME? Many proposals, including actual grant applications(!) are far too optimistic on this point.

Two paper copies and an electronic version need to be submitted to the course administrator before the deadline. The Research proposals will be marked by the individual supervisors (see criteria for assessment of written work). Reports will be screened for plagiarism.

**Guidelines for MRes Research Report**

The thesis should be at a postgraduate level and the length of the report should not exceed 50 word-processed pages including figures and references and must conform to the following formatting guidelines. **Figures need to have proper captions, legends, and axis labelling with physical units.**

The thesis sections must follow the following order and address the bullet point items.

**Table of Contents**
- list of abbreviations
- Abstract
- Introduction
  - Background
  - Aims
- Results
  - Experimental Strategy
  - Results
- Discussion/Conclusion
  - Discussion
  - Conclusion
• Future work

Methods and Materials
• Include experimental details necessary to reproduce experiments
• DO NOT INCLUDE EXPERIMENTAL STRATEGY IN THIS SECTION

Bibliography
• References should be in Nature format. We recommend you use a citation manager such as Endnote or Mendeley, available on College PCs. Students have also used LaTeX and BibTeX successfully in the past.

NO APPENDICES ALLOWED! You can submit additional data or computer code electronically, but it is up to the examiners to consider this extra material.

FORMAT
Font: Arial/Helvetica (11 point minimum)
Line spacing: 1.5
Margins: minimum 2.5 cm all round
References: Nature format

FAILURE TO CONFORM TO FORMAT SPECIFICATIONS WILL RESULT IN THE STUDENTS BEING REQUIRED TO RESUBMIT WITHIN 24h AND WILL INCUR A 5% DEDUCTION IN MARKS.

Three copies in bound form and an electronic version need to be submitted to the course administrator before the deadline on midday Wed 23rd August 2017. The Research Reports will be marked by the individual supervisors and by the viva examiners (see criteria for assessment of written work). Reports will be submitted for plagiarism screening. Students are reminded that the written report comprises 35% of the final mark for the MRes, and should allocate enough time to the writing of the report.
Assessment

Scheme of Examination:
The course will not have any formal written exams. However, each of the five modules will individually be assessed via coursework (see above) with students’ results either presented orally or by a written report. Modules 1a and 1b each contribute 2.5% to overall course mark, while all other modules contribute 5%. The Research Proposal will also be written up and contributes 15% to overall mark. Taken together the modules and research proposal are 40% of overall course mark. In September, the course ends with an oral examination of each student in the area of his/her research project (viva). The report, research conduct, and viva contribute 60% to the overall mark.

The first supervisor will mark the research project and also assess the research conduct during terms 2 and 3, e.g. by creative thinking, lab work, and various presentations at lab meetings. A 30-50 minute viva voce will generally be conducted by the first internal examiner with a second supervisor sitting in. Both together will contribute agreed marks for the report and the viva. Marks will be reviewed by the internal board of examiners and may be moderated.

The course itself will come under the scrutiny of two external examiners with different backgrounds, who will comment on the content, its delivery and conduct. The external examiners will viva all students. Marks may be moderated by the board of examiners taking account of recommendations from the external examiners before the award of the final mark to students.

Minimum standards (i.e. 50%) in each of the two assessed elements (assessed coursework and research project) will be required with an overall pass mark of 50%. To achieve pass with merit a minimum of 59.5%, is required in each of the two elements. To achieve pass with distinction a minimum of 69.5% is required in each of the two elements.

To qualify for the award of MRes, students must complete all the course requirements, including the participation in mandatory extra-curricular events, and must achieve an overall pass mark in the combined examinations including coursework, research report, lab performance/conduct, and viva.

The weighting of project marks. Supervisor assessment – written report (20%), lab performance/conduct (10%). Agreed marks of two viva examiners – written report (15%), oral examination (15%).
## MRes in Systems & Synthetic Biology

**Imperial College London**

### Criteria For Assessment Of Written Work

These criteria are used during the MRes in Systems & Synthetic Biology course to assess project reports and other written work. Due allowance is made for the inter-disciplinary nature of work and the students' previous experience.

<table>
<thead>
<tr>
<th>Percentage Grade</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>85-100</td>
<td><strong>A+ Exceptional.</strong> Outstanding presentation of the subject of publication standard in quality and quantity. Evidence of (i) originality, (ii) high critical/analytical ability* (iii) substantial outside reading and (iv) a thorough assessment of the limitations of any experimental procedures and the significance of results.</td>
</tr>
<tr>
<td>70-84 Distinction</td>
<td><strong>A.</strong> An Excellent presentation of the subject demonstrating critical/analytical ability and other criteria as for Exceptional, but not fully achieving one of them.</td>
</tr>
<tr>
<td>60-69 Merit</td>
<td><strong>B.</strong> Very Good. Complete and accurate presentation of the subject showing a clear understanding of the background with evidence of outside reading. Demonstrates some of the criteria as for Exceptional but not fully achieving in one or more of them.</td>
</tr>
<tr>
<td>50-59 Pass</td>
<td><strong>C.</strong> Work: (i) Demonstrates an understanding of the subject area and the basic concepts and facts, and either (ii) gives an accurate account of at least half of the relevant material but has significant omissions, or (iii) goes beyond that but has significant errors.</td>
</tr>
<tr>
<td>&lt;50 Fail</td>
<td><strong>Unsatisfactory.</strong> Confused and incomplete account of the background, experimental procedures and results marred by substantial errors or omissions.</td>
</tr>
<tr>
<td>30-40</td>
<td>Vague and seriously inadequate account of the subject with substantial omissions and errors.</td>
</tr>
<tr>
<td>15-30</td>
<td>Work is too inaccurate, too irrelevant, or too brief to indicate more than a vague understanding of the topic.</td>
</tr>
<tr>
<td>&lt;15</td>
<td>Presents very little that is correct and relevant.</td>
</tr>
<tr>
<td>0</td>
<td>Experiment not attempted or work not handed in. Mark given where the work presented is discovered not to be that of the candidate (plagiarised). Further disciplinary action is usually taken in cases of plagiarism.</td>
</tr>
</tbody>
</table>

*Analytical* = assessing a hypothesis or statement by breaking it down into its elements and examining their inter-relationships and contribution to the whole. *Critical* = judging a hypothesis or conclusion by examining the validity of the evidence adduced for it.
MRes in Systems & Synthetic Biology

Imperial College London

Criteria For Assessment Of Project Oral Examinations

These criteria are used during the MRes in Systems & Synthetic Biology course to assess project oral examinations. Due allowance is made for the inter-disciplinary nature of work and the students previous experience.

<table>
<thead>
<tr>
<th>Percentage Grade</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>85-100</td>
<td><strong>A+ Exceptional.</strong> Student (i) demonstrates a complete command of the subject and (ii) background material and is able to answer questions fluently, demonstrating, (iii) high critical/analytical ability* (iv) substantial outside reading and (v) a competent assessment of the limitations of any experimental procedures and the significance of results.</td>
</tr>
<tr>
<td>70-84 Distinction</td>
<td><strong>A.</strong> An Excellent discussion of the subject demonstrating critical/analytical ability* plus other criteria as for Exceptional, but not fully achieving all of them.</td>
</tr>
<tr>
<td>60-69 Merit</td>
<td><strong>B.</strong> Very Good.** Student demonstrates a complete and accurate knowledge of the subject showing a clear understanding of the background with evidence of outside reading. Demonstrates some of the criteria as for Exceptional but not fully achieving all of them and may be less able to discuss the work in a wider context.</td>
</tr>
<tr>
<td>50-59 Pass</td>
<td><strong>C.</strong> Student (i) Demonstrates a basic understanding of the subject area and the basic concepts and facts, and is either (ii) able to answer questions within only a limited context or (iii) has significant omissions and/or errors in knowledge of broader background material.</td>
</tr>
<tr>
<td>&lt;50 Fail</td>
<td><strong>Unsatisfactory.</strong> Confused and incomplete understanding of the subject area. Unable to answer questions in relation to the specific project and broader background material. Students knowledge has substantial errors or omissions.</td>
</tr>
<tr>
<td>30-40</td>
<td>Vague and seriously inadequate understanding of the subject with substantial omissions and errors.</td>
</tr>
<tr>
<td>15-30</td>
<td>Student’s knowledge is too inaccurate, too irrelevant, or too brief to indicate more than a vague understanding of the topic.</td>
</tr>
<tr>
<td>&lt;15</td>
<td>Student presents very little that is correct and relevant.</td>
</tr>
<tr>
<td>0</td>
<td>Failure to answer any questions correctly or to attend oral examination.</td>
</tr>
</tbody>
</table>

* Analytical = assessing a hypothesis or statement by breaking it down into its elements and examining their inter-relationships and contribution to the whole. Critical = judging a hypothesis or conclusion by examining the validity of the evidence adduced for it.
# MRes in Systems & Synthetic Biology

**Imperial College London**

## Criteria For Assessment Of Project Laboratory Work

These criteria are used during the **MRes in Systems & Synthetic Biology** course to assess wet or dry laboratory work – ‘experiments’ refers to both theoretical and/or wet work. Due allowance is made for the inter-disciplinary nature of work and the students previous experience.

<table>
<thead>
<tr>
<th>Percentage Grade</th>
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<tbody>
<tr>
<td>85-100</td>
<td><strong>A+.</strong> Quality and quantity of data comparable to that in research articles published in the best journals. All procedures were thoroughly understood and applied correctly including (where applicable) statistical analysis. During the project the student demonstrated an understanding of the limits of the experimental or theoretical procedures and contributed to experimental design with possible alternative strategies and techniques. Was able to work independently and effectively.</td>
</tr>
<tr>
<td>70-84 Distinction</td>
<td><strong>A.</strong> Experimental procedures were understood and applied correctly. Student was able to contribute meaningfully to the development of the project and work largely independently with some guidance. Most experiments were successfully completed. Other criteria as for A+, but not fully achieving all of them. No significant deficiencies in performance or endeavour.</td>
</tr>
<tr>
<td>60-69 Merit</td>
<td><strong>B.</strong> Most experimental procedures were understood and applied correctly. Student needed some guidance and oversight when designing and carrying out experiments but could work independently to some extent. Only minor problems</td>
</tr>
<tr>
<td>50-59 Pass</td>
<td><strong>C.</strong> Student needed significant guidance and oversight. Some experimental procedures understood and applied correctly. Able to follow protocols/procedures and successfully perform some experiments.</td>
</tr>
<tr>
<td>&lt;50 Fail</td>
<td>Weak understanding of experimental procedures. Some significant experimental errors. Very few experiments completed successfully. Failure to properly follow protocols/procedures. Significant lack of endeavour.</td>
</tr>
<tr>
<td>30-40</td>
<td>Only a small amount of experimental work performed. Experimental procedures not understood nor applied correctly. Failure to properly follow protocols.</td>
</tr>
<tr>
<td>15-30</td>
<td>Vague understanding of experimental procedures. No experiments completed.</td>
</tr>
<tr>
<td>&lt;15</td>
<td>Few experiments attempted, student did not engage appropriately with the project.</td>
</tr>
<tr>
<td>0</td>
<td>Experiments not attempted or student not present. Mark given where the work presented is discovered not to be that of the candidate (plagiarised). Further disciplinary action is usually taken in cases of plagiarism.</td>
</tr>
</tbody>
</table>
## Criteria For Assessment Of Presentations

These criteria are used during the MRes in Systems & Synthetic Biology course to assess oral presentations.

<table>
<thead>
<tr>
<th>Percentage Grade</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>85-100</td>
<td><strong>A+. Exceptional.</strong> Presentation demonstrates: <em>(i)</em> complete understanding of the material showing high critical or analytical ability* as relevant, <em>(ii)</em> clear and logical organisation of the material, <em>(iii)</em> excellent use of appropriate resources and teaching aids, <em>(iv)</em> preparatory work including substantial background reading, <em>(v)</em> delivered within the time limit, and <em>(vi)</em> ability to instruct with clarity of exposition and productive engagement with the audience resulting in a very positive learning experience.</td>
</tr>
<tr>
<td>70-84 Distinction</td>
<td><strong>A. Excellent.</strong> A very well presented exposition of the subject delivered within the time limit, showing features as for Exceptional, but not fully achieving all of them.</td>
</tr>
<tr>
<td>60-69 Merit</td>
<td><strong>B. Very Good.</strong> Presentation has the following features: <em>(i)</em> shows a clear understanding of the material with an accurate account that demonstrates some critical or analytical ability**, <em>(ii)</em> good use of resources, <em>(iii)</em> evidence of appropriate background reading, and <em>(iv)</em> succeeds in delivering all the relevant material clearly and within the time limit to the audience so that they appreciate its significance.</td>
</tr>
<tr>
<td>50-59 Pass</td>
<td><strong>C. Presentation:</strong> <em>(i)</em> shows a grasp of the material, <em>(ii)</em> gives an accurate account of most of the relevant material, <em>(iii)</em> shows evidence of some background reading, and <em>(iv)</em> successfully delivers most of the material to the audience in a way that they can understand it, but does not go beyond that or is severely over or under the time limit.</td>
</tr>
<tr>
<td>&lt;50 Fail</td>
<td>Presentation: <em>(i)</em> shows only a basic grasp of the material <em>(ii)</em> shows evidence of little background reading or preparation, <em>(iii)</em> delivers most of the material accurately but makes errors or omissions resulting in a poor learning experience for the audience.</td>
</tr>
<tr>
<td>30-40</td>
<td>Presentation: <em>(i)</em> shows that the material has not been understood, <em>(ii)</em> shows no evidence for background reading or preparation, and <em>(iii)</em> presents the material inaccurately and does not increase the audience’s understanding.</td>
</tr>
<tr>
<td>15-30</td>
<td>Presentation: <em>(i)</em> is too inaccurate, too irrelevant, or too brief to indicate more than a vague understanding of the material, and <em>(ii)</em> only succeeds in misinforming and confusing the audience.</td>
</tr>
<tr>
<td>&lt;15</td>
<td>Presentation includes very little that is correct and relevant.</td>
</tr>
<tr>
<td>0</td>
<td>Failure to make a presentation at all.</td>
</tr>
</tbody>
</table>

* **Analytical** = assessing a hypothesis or statement by breaking it down into its elements and examining their inter-relationships and contribution to the whole; cf. **Critical** = judging a hypothesis or conclusion by examining the validity of the evidence adduced for it.
The College requires all Masters students to take a **compulsory online plagiarism course**. You can sign up for the course online here: [https://www.imperial.ac.uk/study/pg/graduate-school/professional-skills/masters/online/](https://www.imperial.ac.uk/study/pg/graduate-school/professional-skills/masters/online/)

**The College View on Plagiarism**

“Plagiarism”

“You are reminded that all work submitted as part of the requirements for any examination of Imperial College and the University of London, including coursework (such as your case studies, proposal and thesis) must be expressed in your own words and incorporate your own ideas and judgements.

Plagiarism, that is, the presentation of another person’s thoughts or words as though they were your own, must be avoided, with particular care in your literature report and thesis. Note that you are encouraged to read and criticise the work of others as much as possible, and you are expected to incorporate this in your thinking and in your literature report and thesis, however you must acknowledge and label your sources.

Direct quotations from the published or unpublished work of others, from the internet, or from any other source must always be clearly identified as such. A full reference to their source must be provided in the proper form and quotation marks used. Remember that a series of short quotations from several different sources, if not clearly identified as such, and constitutes plagiarism just as much as a single unacknowledged long quotation from a single source. Equally, if you summarise another person’s ideas or judgements, figures, diagrams or software, you must refer to that person in your text, and include the work referred to in your bibliography. Supervisors are able to give advice about the appropriate use and correct acknowledgement of other sources in your own work.

The use of the work of another student, past or present, constitutes plagiarism. Where work is used without the consent of that student, this will normally be regarded as a major offence of plagiarism.

Failure to observe these rules may result in an allegation of cheating. Cases of suspected plagiarism will be dealt with under the College’s Examination Offences Policy [http://www.imperial.ac.uk/media/imperial-college/administration-and-support-services/registry/academic-governance/public/regulations/2009-10/exam-regs/Cheating-Offences-Policy-and-Procedure-(Exam-Reg,-Appendix-3).pdf](http://www.imperial.ac.uk/media/imperial-college/administration-and-support-services/registry/academic-governance/public/regulations/2009-10/exam-regs/Cheating-Offences-Policy-and-Procedure-(Exam-Reg,-Appendix-3).pdf) and may result in a penalty being taken against any student found guilty of plagiarism.

Specific learning difficulties

Information for Students with disabilities, specific learning difficulties or long-term health issues

At Imperial College we recognise that studying at university can be a challenge, especially if you have a disability. We are keen that you have every opportunity to fulfil your potential and graduate with the degree you deserve. It is therefore important that you let us know about any disability, specific learning difficulty or health problem as soon as possible so that we can give expert advice and support to enable you to do this.

Some people never think of themselves as having a disability, but students who have experienced any of the issues listed below have found that a little extra help and support has made all the difference to their study experience.

- Specific learning difficulties (such as dyslexia, dyspraxia, AD[H]D)
- Autistic spectrum disorder (such as Asperger’s)
- Deafness or hearing difficulties
- Long term mental health difficulties (such as chronic anxiety, bipolar disorder, depression)
- Medical conditions (such as epilepsy, arthritis, diabetes, Crohn’s disease)
- Physical disabilities or mobility impairments
- Visual difficulties

Where to find help:
The Postgraduate Tutor and Disabilities Liaison Officer is Professor Neil Fairweather, n.fairweather@imperial.ac.uk ext 45247

Professor Neil Fairweather is your first point of contact within your department and is there to help you with arranging any support within the department that you need. Neil is also the person who will apply for Special Examination arrangements on your behalf. You need to contact him without delay if you think that you may need extra time or other adjustments for your examinations.


Disability Advisory Service:

http://www.imperial.ac.uk/disability-advisory-service/

The Disability Advisory Service works with individual students no matter what their disability to ensure that they have the support they need. We can also help if you think that you may have an unrecognised study problem such as dyslexia. Our service is both confidential (information about you is only passed on to other people in the university with your agreement) and individual in that any support is tailored to what you need.

Some of the sorts of things we can help with are:

- Being an advocate on your behalf with others in the College such as your departmental liaison officer senior tutor or exams officer, the accommodation office or the estates department
- Checking that your evidence of disability is appropriate and up-to-date
- Arranging a diagnostic assessment for specific learning difficulties
- Help with applying to the College for the cost of an assessment
- Help with your application for the Disabled Students Allowance (DSA) see below
- Helping students not eligible for the Disabled Students Allowance in obtaining support from other sources
- Help with arranging extra Library support
- Supporting applications for continuing accommodation for your second or later years
Disabled Students Allowance:
http://www3.imperial.ac.uk/disabilityadvisoryservice/supportatimperial/funding

Students who are home for fees and who have a disability can apply for a grant called the Disabled Students Allowance which can pay any extra costs that are a direct result of disability. This fund is not means-tested and is also a grant not a loan so any home student with a disability can apply and will not be expected to pay it back. Remember students with unseen disabilities such as mental health difficulties, dyslexic type difficulties or long term health problems are also eligible for this fund.

Occupational Health information for PG students

Summary

The College Occupational Health (OH) Service provides the same clinical services to taught and research postgraduates as we do to staff. However students do not go through pre-employment health screening so we are unaware of students who need vaccinations, health clearance or health surveillance unless they contact us. Course organisers or supervisors need to instruct new students needing these services to contact the College OH service. More specific information is below.

Health and safety information (OH requirements, vaccinations, use of equipment, training etc):
http://www.imperial.ac.uk/occupational-health

Health clearance for work with pathogens, GMOs or unfixed human tissue.

Postgraduate students who will be handling human pathogens, GMOs of class 2 or higher or unfixed human tissue, including blood, in a laboratory environment must be health cleared for this activity. Students requiring clearance should be instructed to complete a Biological Agents Health Questionnaire and to send this to the College OH Service at South Kensington. Most will be cleared through submission of the questionnaire. We will only call them in for a clinic attendance if they need a vaccination or they declare a health problem that requires a further assessment. After the student is cleared they will be sent an e-mail confirming this. This is copied to whoever is named as the Principal Investigator on the questionnaire and to the College Biological Safety Officer. Students who will not be directly handling and screened blood do not need health clearance or vaccination.

Health surveillance enrolment for work with laboratory animals.

Any student who will be working with live laboratory animals must enrol for health surveillance with the College OH Service before commencing their research programme. Enrolment is not required prior to licensee training. Students who require it should be instructed to complete a health surveillance enrolment questionnaire and to arrange an appointment with the College OH Service for a mask fit test and lung function testing. They should only arrange the appointment when they are within 2 to 3 weeks of commencing their research work. Once student has completed enrolment an e-mail confirming this will be sent to the student and copied to the manager of the CBS facility in which it will be working and their Principal Investigator.

NHS health clearance

All postgraduate students who will have contact with patients in a clinical environment have to complete NHS infection control clearance. This health clearance is carried out by the College OH Service.
Students should be instructed to complete a Postgraduate Health Clearance Form and arrange an appointment with an OH Adviser at the College OH clinic at South Kensington. They should bring copies of any of vaccination records and relevant serology tests to the appointment. When the student complete health clearance the certificate on page 2 of the questionnaire will be stamped and given to the student to pass on to their course organiser or principal investigator.

**Health clearance for travel**

Postgraduate students travelling abroad for study or research have the same health clearance requirements as for staff. Clearance is compulsory for any travel to a tropical country. If any vaccinations are required for the destination country then an appointment with the OH Service should be sought at least four weeks in advance of travel. Students will need to provide evidence that their trip is directly related to their study or research activity. Clearance will be notified to the Principal Investigator/supervisor named on the health clearance questionnaire.

**Emergency assessment and treatment of laboratory accidents**

Postgraduate students based on hospital campuses can attend the hospital OH clinic for emergency assessment and treatment of inoculation accidents involving human blood or unfixed tissues. Any other emergency assessment will be carried out by the College OH Service at South Kensington. For information on the urgency and form for assessment consult the laboratory accident guide issued by the OH Service last year. If you would like to receive some copies contact occhealth@imperial.ac.uk

http://www.imperial.ac.uk/estates-facilities/about-us/campus-emergency-contacts/

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Student Surveys

Your feedback is important to your department, the College and Imperial College Union. Whilst there are a variety of means to give your feedback on your Imperial experience, the following College-wide surveys give you regular opportunities to make your voice heard:

- PG SOLE lecturer/module Survey
- Student Experience Survey (SES)
- Postgraduate Taught Experience Survey (PTES)

The PG SOLE lecturer/module survey runs at the end of the Autumn Term. This survey is your chance to tell us about the modules you have attended and the lecturers who taught them

http://www.imperial.ac.uk/students/academic-support/student-surveys/pg-student-surveys/pg-sole/

For PG SOLE your lecturers will receive their individual numerical results and comments shortly after the survey closes. To make the most of your opportunity to give your feedback, please refrain from using offensive language or making personal, discriminatory or abusive remarks as these may cause offence and will be removed from the results and not be read. Whist this survey is anonymous, you are also cautioned to avoid self-identification by referring to personal or other identifying information in your free text comments.

Imperial College Union’s Student Experience Survey (SES) is another opportunity to leave your views on your experience. This survey will cover your induction, welfare, pastoral and support services experience.

The Postgraduate Taught Experience Survey (PTES) is the only national survey of Master’s level (MSc, MRes, MBA and MPH) students we do and so the only way for us to compare how we are doing against the national average and to make changes that will improve our Master’s students’ experience in future. PTES covers topics such as motivations for taking the programme, depth of learning, organisation, dissertation and professional development. During the spring term you will receive an email in your Imperial College account with a link to the survey.

All these surveys are anonymous and the more students that take part the more representative the results so please take a few minutes to give your views.

The Union’s “You Said, We Did” Campaign at https://www.imperialcollegeunion.org/you-said-we-did shows you some of the changes made as a result of survey feedback.

For further information on surveys please contact the Registry’s Surveys Team on surveys.registriesupport@imperial.ac.uk
http://www.imperial.ac.uk/students/academic-support/student-surveys/

Student Reps

We have a staff-student committee that meets once per term with minuted meetings for direct feedback to the Course Organizers. Shortly after term starts the cohort will be asked to select two student reps to the committee.

In response to feedback we have changed the way modules are assessed, and aspects of the course structure.
College Procedures

• The College’s Regulations for Students:
  http://www.imperial.ac.uk/about/governance/academic-governance/regulations/

• Mitigation / extenuating circumstances policy and procedures:
  http://www3.imperial.ac.uk/registry/proceduresandregulations/policiesandprocedures/examination
  assessment

• Complaints and Appeals procedures:
  https://www.imperial.ac.uk/about/governance/academic-governance/academic-policy/complaints-
  appeals-and-discipline/

• Academic integrity:
  http://www.imperial.ac.uk/student-records-and-data/for-current-students/undergraduate-and-
  taught-postgraduate/exams-assessments-and-regulations/plagiarism-academic-integrity--exam-
  offences/

• Cheating offences policy and procedures:
  https://www.imperial.ac.uk/media/imperial-college/administration-and-support-
  services/registry/academic-governance/public/regulations/2015-16/exam-regs/Cheating-offences-
  policy-and-procedure.pdf