Faculty of Natural Sciences

Department of Life Sciences

MSc Bioinformatics and
Theoretical Systems Biology

STUDENT HANDBOOK
2017–18
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Welcome to the College

Congratulations on joining Imperial College London, the only university in the UK to focus exclusively on science, medicine, engineering and business.

From Fleming’s discovery of Penicillin to Gabor’s invention of holography, Imperial has been changing the world for well over 100 years. You’re now part of this prestigious community of discovery and we hope you will take this opportunity to make your own unique contribution.

We’re committed to providing you with the very best academic resources to enrich your experience. We also provide a dedicated support network and a range of specialist support services to make sure you have access to the appropriate help, whether that’s further training in an academic skill like note taking or simply having someone to talk to.

You’ll have access to an innovative range of professional development courses within our Graduate School throughout your time here, as well as opportunities to meet students from across the College at academic and social events – see page 6 for more information.

We actively encourage you to seek out help when you need it and try to maintain a healthy work-life balance. Our choice of over 340 clubs, societies and projects is one of the largest of any UK university, making it easy to do something different with your downtime. You also have free access to gym (following a one-off orientation fee of £40 in 2017-18) and swimming facilities across our campuses.

As one of the best universities in the world, we are committed to inspiring the next generation of scientists, engineers, clinicians and business leaders by continuing to share the wonder of what we do through public engagement events. Postgraduate students, alongside our academics and undergraduate students, make a significant contribution to events such as our annual Imperial Festival and our term-time Imperial Fringe events – if you’re interested in getting involved then there will be opportunities for you to do so.
Our Principles

In 2012 the College and Imperial College Union agreed ‘Our Principles’ a series of commitments made between students and the College. The Principles are reviewed annually by the Quality Assurance and Enhancement Committee and changes recommended for Senate approval.

Imperial will provide through its staff:
- A world class education embedded in a research environment
- Advice, guidance and support
- The opportunity for students to contribute to the evaluation and development of programmes and services

Imperial will provide students with:
- Clear programme information and assessment criteria
- Clear and fair academic regulations, policies and procedures
- Details of full programme costs and financial support
- An appropriate and inclusive framework for study, learning and research

Imperial students should:
- Take responsibility for managing their own learning
- Engage with the College to review and enhance provision
- Respect, and contribute to, the Imperial community

The Imperial College Students’ Union will:
- Support all students through the provision of independent academic and welfare assistance
- Encourage student participation in all aspects of the College
- Provide a range of clubs, societies, student-led projects and social activities throughout the year
- Represent the interests of students at local, national and international level
Welcome from the Graduate School

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 Master’s 360 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.

Dr Janet De Wilde, Head of Postgraduate Professional Development

I would like to welcome you to the Graduate School programme for postgraduate professional development.

Our team of tutors 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 the courses we offer and over this year you will see a range of new courses including face-to-face workshops, interactive webinars and online self-paced courses.

I encourage you to explore and engage with the diverse range of opportunities on offer from graduate school and I wish you well in your studies.

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

You automatically become a member of the Graduate School when you register as a postgraduate student at Imperial.

The Graduate School has been set up to support all postgraduate students at the College through:

- Training and development courses
- Networking activities, social and academic events to encourage cross-disciplinary interactions
- Forums to represent the views of postgraduate students throughout the College

‘Masterclass’ professional skills courses

You can see the full range of free professional skills courses for postgraduate students on the Graduate School website:

[www.imperial.ac.uk/study/pg/graduate-school/professional-skills/masters](http://www.imperial.ac.uk/study/pg/graduate-school/professional-skills/masters)

All courses can be booked online.

Contact us

Level 3, Sherfield Building, South Kensington Campus
020 7594 1383
graduate.school@imperial.ac.uk
[www.imperial.ac.uk/graduate-school](http://www.imperial.ac.uk/graduate-school)
Welcome from the Graduate Students’ Union (GSU)

I am delighted to be able to welcome you to Imperial College and to introduce you to the Graduate Students’ Union (GSU). The GSU ultimately serves to represent you as a postgraduate student and to ensure you have the most fulfilling and enjoyable time possible at Imperial.

The GSU is a university-wide representative body for postgraduate students with a committee comprised of democratically elected postgraduate students. The GSU works to support students on welfare fronts, represent students on educational matters by working with you to voice your concerns to College/departments, whilst also hosting recreational events throughout the year.

Imperial College London is undoubtedly a world-class institution with unique strengths in both teaching and research. Having been an Imperial student for 5 years myself I can fully appreciate that the university is nothing more than the people that comprise it – you’re among some of the brightest minds in the world and Imperial welcomes your contributions and enthusiasm in every sense! I encourage you to make the most of being a valued member of the Imperial community.

I hope you have a fantastic time here at Imperial and manage to take advantage of the richness of opportunity that awaits you. If you have any questions at this stage, then please do get in touch.

Luke McCrone, GSU President 2017/18

gsu.president@imperial.ac.uk

www.imperialgsu.com
1. Introduction to the Department

**Academic and Administrative staff**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Building</th>
<th>Phone Number</th>
<th>Email</th>
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<tbody>
<tr>
<td>Professor Michael Stumpf</td>
<td>Course Director</td>
<td>Sir Ernst Chain</td>
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<td>Dr Kleoniki Gounaris</td>
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<td>Role</td>
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<td></td>
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<td>Dr Tony Southall</td>
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<tr>
<td>Postgraduate Tutor/Disability Liaison Officer</td>
<td></td>
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<tr>
<td>Dr Suhail Islam</td>
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<tr>
<td>Senior Research Officer</td>
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<td>301, Sir Ernst Chain Building</td>
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**English language requirement**
If you are not a native English speaker you must meet the College’s English language requirements.

See the Admissions website for details:

[www.imperial.ac.uk/study/pg/apply/requirements/english](http://www.imperial.ac.uk/study/pg/apply/requirements/english)

For information on English language support available while you’re here, see page 48.

**Attendance and absence**
You must inform your Senior Postgraduate Tutor if you are absent from the College for more than three days during term. If the absence is due to illness you must produce a medical certificate after seven days. If you miss an examination through illness you must contact your Senior Postgraduate Tutor on the day and provide a medical certificate within five working days.

The Registry will be informed of all student non-attendances as the College is obliged to report the non-attendance of students on Tier 4 visas to the Home Office.

**Key dates 2017-18**
Please note your course extends outside the term dates but there will be no teaching or other requirement to work on projects during the closure dates

**Term dates**

<table>
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<th>Term</th>
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<tr>
<td>Autumn term</td>
<td>30 September - 15 December 2017</td>
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<tr>
<td>Spring term</td>
<td>6 January - 23 March 2018</td>
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<tr>
<td>Summer term</td>
<td>28 April - 29 June 2018</td>
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**Closure dates**

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<th>Dates</th>
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<td>Christmas/New year</td>
<td>22 December 2017 – 1 January 2018</td>
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<td>(College reopens on 2 January 2018)</td>
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<td>Easter holiday</td>
<td>28 March – 3 April 2018</td>
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<td>(College reopens on 4 April 2018)</td>
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<td>Early May bank holiday</td>
<td>7 May 2018</td>
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<tr>
<td>Spring bank holiday</td>
<td>28 May 2018</td>
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<tr>
<td>Summer bank holiday</td>
<td>27 August 2018</td>
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**Key events**

<table>
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<th>Dates</th>
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<td>Postgraduate Awards Ceremonies</td>
<td>tbc May 2017</td>
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<tr>
<td>Imperial Festival and Alumni Festival</td>
<td>tbc May 2017</td>
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2. Programme Information

The first term of the year will be spent on taught courses. These courses reflect the background of the students as much as the requirements of the working research bioinformatician and systems biologist. We aim to provide an introduction to computing, mathematics/statistics and biology as well as a survey over recent developments in bioinformatics and systems biology. Depending on your background you may find parts of the course familiar while other parts will introduce novel material and concepts. Students with a background in biology will have to become familiar with a range of mathematical and numerical techniques, while those from the mathematical and physical sciences will have to learn genetics and genomics at the level of final year undergraduate biologists. The amount of time spent on learning the material covered in the different courses will necessarily have to reflect this. Ample time for revision is built into the time-table.

At the end of the MSc degree students should have gained an overview of bioinformatics and systems biology, as well as a proper foundation to develop these fields further. Bioinformatics and systems biology are highly active and quickly changing research areas and there is no substitute for a sound understanding of basic concepts of biology, mathematics/statistics and computing. These will be provided in this course.

Students should also have developed their abilities in software design and statistical analysis, including the critical discussion of scientific results. Finally they should have improved their skills in presenting scientific work verbally and in written form.

2.1 Course Outlines

2.1.1 Bioinformatics and Systems Biology I

This course covers genetics and genomics as well as experimental and mathematical foundations of systems biology. After a brief review of basic concepts this course proceeds quickly and covers functional as well as medical genomics. You will receive detailed overviews over several ongoing genome projects.

Lectures include:

- Genes and Genomes
- Proteins
- Gene Expression
- Cell Biology
- Cellular Biochemistry and Metabolism
- Functional and Structural Genomics
- Population and Evolutionary Biology
- Integrative Systems Biology

There will be one or more question and answer sessions which are targeted at those who have had no previous exposure to biology.
Recommended reading for this course includes:

1. Mount, Bioinformatics
2. Strachan and Read, Human Molecular Genetics
3. Passarge, Colour Atlas of Genetics

2.1.2 Statistics and Mathematics
The main objective of this course is to introduce the theory of probability and techniques for carrying out probability calculations, as well as to introduce the theory of statistical inference and statistical learning techniques. Fundamental topics will be selected with emphasis on important issues arising in bioinformatics applications, such as hypothesis testing and the problem of multiple comparisons. Essential techniques for statistical modelling and data analysis will be introduced and various computational methods with particular relevance to systems biology will be illustrated.

You will receive lectures on:

- Probability and discrete random variables
- Independence, joint and conditional probabilities
- Discrete distributions and generation of random numbers
- Continuous random variables and distributions
- Population vs sample statistics and descriptive statistics
- Likelihood
- Bayesian methods and inference
- Statistical tests
- Bootstrap and randomization
- Markov processes and HMMs
- Statistical learning theory
- Classification and Clustering
- Regression models
- Stochastic processes
- Dynamical systems, difference equations and differential equations
- Analysis of differential equations
- Partial and stochastic differential equations
- Parameter estimation and optimization
- Graphical models
- Model selection

These lectures will be supplemented by an Introduction to the Julia programming language.

Recommended Reading:

1. Stirzaker, Elementary probability
2. Stirzaker, Probability and random variables: a beginner’s guide
3. Ewens and Grant, Statistical methods in bioinformatics
2.1.3 Computing

This course provides an introduction to the important computational methods and languages in bioinformatics and systems biology. It aims to provide highly transferable skills. Students who have taken this course should be able to learn new methods and languages independently if the need arises.

Python

This course provides an introduction to scripting programming with Python including object-oriented programming. The course is assessed by programming assignments and also a Python practical timed assessment.

Python

This is one of the main programming languages used in bioinformatics and is taught using bioinformatics related examples. Topics covered include:

- Writing a simple script
- File handling including parsing and extracting data
- Lists/arrays
- Dictionaries/associative arrays
- Regular expressions
- Functions
- Modules
- PyCogent, a Python software library for genomic biology
- Object oriented Python

Introduction to Databases

The course is a general introduction to relational databases. Topics covered include database design and an overview of normalisation. This will be followed by a presentation of MySQL and how to create, populate and access information in a database.

Web development.

The course is a general introduction to website development. Topics covered include HTML, and the use of a Python framework to develop dynamical websites.

There will be weekly lectures and lab sessions for the programming that will run in most weeks of the first term. The course is assessed with two assignments covering Python programming. Databases are covered in lectures by Dr Huntley.
2.1.4 Bioinformatics and Systems Biology II

Aims:

- To provide students with a state-of-the-art understanding of the principles, algorithms and programs in bioinformatics and systems biology methodologies across a broad range of application areas.
- To introduce the most important bioinformatics tools in core areas and experience of systems biology analysis
- To introduce key computational methods that impinge directly on contemporary bioinformatics and systems biology
- To provide an understanding of the limitations of contemporary bioinformatics and systems biology

Objectives:

The lectures in the course will be divided into the following components:

- The DNA component: DNA sequence analysis; prokaryotic and eukaryotic genome annotation; expression arrays.
- Statistical component: statistical and population genetics

Course timetable There will be approximately 40 hours of lectures running through the autumn term. There will be three practical exercises which will each occupy the student for 10 -15 hours and will be phased throughout the course.

The exercises will be given out in parallel with the lectures and will cover: protein annotation (term 1) and genome annotation (term 1). Recommended reading will be announced during the lectures. A good introductory book is A Lesk Introduction to Bioinformatics 4th ed Oxford University Press
2.2 Projects

The following are general points which apply to all three projects:

Attendance in laboratory.

Students are expected to work at Imperial and cannot expect their supervisor or work colleagues (while they are on campus) to provide scientific guidance by email rather than face to face meetings. During the projects, you are expected to be proactive in raising issues with your supervisor and work colleagues.

Data security.

Please note that it is your responsibility to ensure all files for both research and reports are securely backed up. **You must discuss file back up with your supervisor and note assume it is secure.** In particular if you are just working on a desktop, you need to ensure it is backed up regularly on a central secure file system. You must consider that all data on a laptop can be unrecoverable and you must back it up regularly. If you fail to implement a sensible file back up policy, then you will be penalised for limited results and late hand in.

Computational and mathematical requirements of projects.

To pass the work reported in any projects must demonstrate a level of mathematical, statistical or computational skill that extends beyond just the use of existing programs. If you have any concerns whether your project meets this requirement, you must discuss it with the Course Director or Deputy Director.

2.2.1 Computing Project

The aim of this project is to further develop students’ computational expertise in a bioinformatics and/or systems biology setting and to apply the newly acquired skills in the development of a substantial piece of software. The development of a functional genomics data-base with a web-based user-interface is an example of a previous project. Depending on the nature of the project students may have to learn new computational techniques.

By default this is a group project, where typically 3-4 students will implement a large software project under the supervision of a member of the Centre for Integrative Systems Biology and Bioinformatics (CISBIO). The supervisor will, however, only give minimal guidance and leave planning, development, implementation and tuning of the software to the students. Each group has approximately 11 weeks to complete the project. It is assessed through:

- A group report in the form of user documentation
- An individual report
- A presentation of the project to the course
- Performance during the project.

The group report should provide an overview over the software product and information on how to use it. **In the joint report clearly indicate in each section by use of initials who wrote that section and if different who undertook the work. Joint authorship is allowed.** The individual reports should contain a **detailed description of the work each student contributed to the overall project**. This can include a log-book of the progress.
made during the course of the project and explain the choices made during the design and implementation phase. Individual reports should not be longer than 3,000 words.

The final presentation of the project should introduce the other students on the course to the software and each student should present their contribution to the overall project. This presentation forms part of the assessment of the project. The examiners may call individual students for an in-depth viva voce examination.

In cases where a student can prove proficiency and experience in computer science they may also be given the opportunity to do an individual software project. In this case it is assessed by:

- An individual report
- A presentation
- Performance during the project.

Three copies of the individual and group reports have to be submitted for assessment; in addition an electronic copy has to be submitted. Late submission can lead to a deduction of 10% of the final mark per day.

For group as well as for the individual projects the performance during the course of the project is also assessed by the supervisor of the project. It is, however, left to the members of each group how to divide the necessary work among themselves.

The mark for this project accounts for 50% of Element 2 and thus 20% of the total mark of the degree.

2.2.2 Data Analysis Project

For the second project, the students work on the statistical and computational analysis of biological or biomedical datasets in collaboration with experimental/clinical groups within Imperial College London. This should be related to ongoing research projects. Assessment will be through a web-page detailing the results of the research. The supervisor will mark lab performance and scientific aspect of the report at a ratio of 2:1. The examiners will mark the webpage report and scientific aspect at a ratio of 2:1. Late submission will lead to a deduction of 10% of the final mark for the report per day.

The mark for this project accounts for 50% of Element 2 and thus 20% of the total mark of the degree.

2.2.3 Bioinformatics and Theoretical Systems Biology Project

This forms Element 3 of the course. The third project can be hosted by any suitably qualified bioinformatics and systems biology group within Imperial College London, including all associated hospitals and Silwood Park campuses. The project must not be purely computational, mathematical or statistical but must serve to introduce the student to a high quality bioinformatics and systems biology research environment. Topics can range from
applied bioinformatics all the way through to mathematical biology. Students cannot perform their bioinformatics project outside of Imperial College.

During the project each student will become part of their host laboratory and work alongside PhD students and postdocs on a topic agreed with the supervisor. The project has to involve substantial use of bioinformatics tools and/or development of bioinformatics and systems biology methods. **It must not include any experimental work.** The project scope can range from developing or integrating software tools to working on mathematical models of biological systems.

Students are expected to submit three copies of their work, as well as an electronic copy. Late submission of the report can result in a 10% deduction from the final mark per day (or part of a day) from the report grade.

The project is assessed by the supervisor who gives marks for the lab performance and the report which contribute at a ratio 2:1 and, in total, make up 50% of the overall project grade. The project is also assessed by two examiners in a viva. The examiners mark the report as well as the viva which contributes at a ratio of 1:2, and which make up the remaining 50%.

Overall the bioinformatics project contributes 30% to the overall degree.

If no report is submitted more than 3 days after the submission without previous agreement from the Course Director having been given, we reserve the right to postpone the viva to the following year. This will result in you not receiving your award.
**Imperial Mobile app**

Don’t forget to download the free Imperial Mobile app for access to College information and services, including your programme timetable, College emails and a library catalogue search tool.

[www.imperial.ac.uk/imperialmobile](http://www.imperial.ac.uk/imperialmobile)

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**Imperial Success Guide**

The Imperial Success Guide is an online resource with advice and tips on the transition to Master’s level study. More than just a study guide, it is packed with advice created especially for Imperial Master’s students, including information on support, health and well-being and ideas to help you make the most of London.

[www.imperial.ac.uk/success-guide](http://www.imperial.ac.uk/success-guide)
3. Assessment

The taught components will be assessed partly through written exams and partly through small practicals. There may be some minor changes to the course content which will be announced well ahead of the actual exams. Assessment of the taught components will follow along these lines:

Component 1

Bioinformatics and Systems Biology I

This will be assessed through a written exam of two hours. Students will have the choice of 3 out of 6 questions covering the material of the lectures. One question out of three related to genes and genomics, and one out of three questions related to systems biology have to be answered. The third question can be chosen from either category. Each question carries the same mark.

Bioinformatics and Systems Biology II

There are three practical assignments and a three hour written exam which contribute to the overall mark. All practical exercises together will contribute 25% with the remaining 75% of the exam results. The examination will be split into two parts. For the first part (Part A), which lasts one hour, students have to answer six short compulsory questions. After a short break, the second part (Part B), lasting two hours, will require the students to answer three questions from five. The first three of set questions will be primarily focussed on bioinformatics (Part B1) and the remaining two of systems biology (Part B2). The student must answer one question from Part B1, one from Part B2, and one from either Part B1 or B2. Each short question provides 5% of the exam mark, while the three long questions provide 70% in total.

Component 2

Mathematics, Probability and Statistics

This course is assessed through a two hour written exam, where students have to answer three out of six short questions and two out of for long questions. Each short question contributes 10% to the final examination mark and each long question 35%. In addition there is a Julia project on computational statistics. Separate marks are given for content, coding and project presentation. The assignments contribute 25% to the final mark of this part.

Computing

There will two marked assignment in Python (each contribution 25%) and one timed exam style test (contributing 50%). There will be sufficient time in this test to allow students who have learnt computing for the first time and are competent to finish the questions. The timed exam style test will be held shortly after the Easter break in April 2018.
The relative weightings of the above to Element 1 are:

- Bioinformatics and Theoretical Systems Biology I: 5 out of 45
- Bioinformatics and Theoretical Systems Biology II: 25 out of 45
- Mathematics, Probability and Statistics: 10 out of 45
- Computing: 5 out of 45

During the first three months of the course students attend lectures are assessed by course work and examinations. This is an integral part of the degree and contributes to the final mark. It is expected that students attend courses and hand in the completed course work in time. Should personal and/or health problems require the student to take some time off, then this should be immediately brought to the attention of the Course Director.

Students are permitted to take sound recordings of a lecture if they have obtained consent from the lecturer. Video recording are not permitted. If a student arrives more than 10 minutes late for a lecture, the lecturer has the right to refuse admission to prevent disruption to the detriment of other students.

The research projects aim to introduce students to an active research environment. Performance during the project is part of the formal assessment and students should try to arrange working hours together with their supervisor. As the time on each project is limited to approximately 12 weeks the students also have to agree leave of absence with their project supervisors and the course director. Failure to do so may be reflected in the mark for lab-performance. This is a full time degree and we are unlikely to approve total absences of more than one week except for major health reasons. Some students require leave to attend interviews and this is included in the allowance of one week.

Any assessments or project reports that are handed in late will be downgraded. Every day (or part of day) late will result in a 10% reduction from the final mark.

Course contents may vary slightly between years in order to reflect the students' needs as well as the fast pace at which these fields are progressing. Thus there may be minor changes to the topics to be presented from those identified in this handbook. The taught components are assessed partly through course work and through written exams. The three projects are in computing data analysis and bioinformatics/systems biology, respectively. They all last for approximately 12 weeks and aim to deepen the students understanding of advanced concepts and methods in bioinformatics. The overall degree is assessed in a viva with the external examiners.
Grades from the course

There are four outcomes from your MSc course: distinction, merit, pass and fail.

**Distinction** – You obtain at least 70% in each of the three elements.

**Merit** – You obtain at least 60% in each of the three elements

**Pass** – You obtain at least 50% in each of the three elements.

**Fail** – You obtain less than 50% in any of the three elements, irrespective of the aggregate mark for the entire course. In addition, if you obtain less than 40% in any component of an element, this is a fail irrespective of the aggregate mark for the element.

Note that the aggregate grade for your course from the three elements does not define your outcome.

**Borderline students**

If you are below no more than 2.5% of a grade boundary in any element you are considered as a borderline student and you can be upgraded after the External Examiners’ meeting. No student can be moved down at the External Examiners’ meeting.

**External Examiners’ meeting**

The External Examiners review the marks obtained from all three elements from the course. The External Examiners will viva some students from the course. All students who are at a borderline (i.e. below no more than 2.5% for any grade boundary) will be invited to interview and these students are reminded that is in their interest to attend viva if invited. Examiners normally will also see representative students from each classification; students who represent a balance of disciplines; students who have failed and candidates for the student prize. Please note that no student can be downgraded as a result of the External Examiners’ meeting. In addition, all students are invited to meet the external Examiners’ without any staff present to give feedback about the course. This will be conveyed anonymously to the staff and may be included in the report of the External Examiners to the college.
College’s Academic and Examination regulations:

www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment

Penalties for Late Submission of Assessed Work:
www.imperial.ac.uk/media/imperial-college/administration-and-support-services/registry/academic-governance/public/academic-policy/marketing-and-moderation/Penalties-for-late-submission-of-assessed-work.pdf

Mitigating circumstances policy and procedures:
www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/

College policy on exams and religious obligations:
3.1: Criteria for Assessment of Written work – long questions

These criteria are used to assess the essay questions. Note that account is taken of the teaching of the subject, the instructions provided for the work (e.g. level of presentation for dissertations) and the type of question set. For examination answers, allowance is made for what is reasonably achievable under examination conditions.

<table>
<thead>
<tr>
<th>Literal Grade</th>
<th>Percentage Grade</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A*</td>
<td>85-100</td>
<td>Distinction+. Answer is an exceptionally well presented exposition of the subject showing: (i) complete command of the relevant concepts and facts, (ii) a high critical or analytical ability**, (iii) originality, and (iv) evidence of substantial outside reading.</td>
</tr>
<tr>
<td>A+</td>
<td>80</td>
<td>Distinction. Answer is a very well presented exposition of the subject, showing the above features, but not fully achieving one of them.</td>
</tr>
<tr>
<td>A</td>
<td>76</td>
<td>Merit. Answer has the following features, but without fully achieving one of them: (i) shows a clear grasp of the relevant concepts and facts, (ii) gives an accurate account of the relevant taught material, and (iii) shows evidence of some outside reading, or of critical or analytical ability**.</td>
</tr>
<tr>
<td>A-</td>
<td>72</td>
<td>Pass. Answer: (i) shows a grasp of the basic concepts and facts, (ii) gives a mainly accurate account of at least half of the relevant taught material, but (iii) does not go beyond that, or goes beyond that but is then marred by significant errors.</td>
</tr>
<tr>
<td>B+</td>
<td>68</td>
<td>Pass mark</td>
</tr>
<tr>
<td>B</td>
<td>65</td>
<td>Fail. Answer: (i) shows only a basic grasp of the fundamental concepts and facts, but is marred by major errors or omissions and (ii) presents accurately at least a third of the material expected.</td>
</tr>
<tr>
<td>B-</td>
<td>62</td>
<td>Answer: (i) shows a confused understanding of the question, and (ii) presents less than a third of a material expected.</td>
</tr>
<tr>
<td>C+</td>
<td>58</td>
<td>Answer: (i) is too inaccurate, too irrelevant, or too brief to indicate more than a vague understanding of the question, and (ii) presents only about a quarter of a material expected.</td>
</tr>
<tr>
<td>C</td>
<td>55</td>
<td>Answer presents only two or three sentences or facts that are correct and relevant.</td>
</tr>
<tr>
<td>C-</td>
<td>52</td>
<td>Answer includes at most one sentence or fact that is correct and relevant to the question.</td>
</tr>
<tr>
<td>D+</td>
<td>48</td>
<td>Answer contains nothing correct that is relevant to question. Mark to be given where the work is discovered not to be that of the candidate (plagiarised). Further disciplinary action is usually taken in cases of plagiarism.</td>
</tr>
<tr>
<td>D</td>
<td>45</td>
<td>** 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.</td>
</tr>
</tbody>
</table>
| D-            | 42               | **
3.2: Criteria for Assessment of Written work – short questions

These criteria are used to assess the short questions in the MSc in Bioinformatics module Bioinformatics II. For these examination answers, allowance is made for what is reasonably achievable under examination conditions including the time available.

<table>
<thead>
<tr>
<th>Grade out of 5</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td><strong>Distinction+.</strong> Answer (i) shows a very clear grasp of the relevant concepts and facts, (ii) gives an accurate account of the relevant taught material, and (iii) is well presented.</td>
</tr>
<tr>
<td>4</td>
<td><strong>Distinction.</strong> Answer (i) shows a clear grasp of the relevant concepts and facts, (ii) gives an accurate account of most of the relevant taught material.</td>
</tr>
<tr>
<td>3</td>
<td><strong>Merit/Pass</strong> Answer: (i) shows a grasp of the basic concepts and facts, (ii) gives a mainly accurate account of at least half of the relevant taught material.</td>
</tr>
<tr>
<td>2</td>
<td><strong>Fail.</strong> Answer: (i) shows only a basic grasp of the fundamental concepts and facts, but is marred by major errors or omissions and (ii) presents accurately at least a third of the material expected.</td>
</tr>
<tr>
<td>1</td>
<td>Answer: (i) shows a confused understanding of the question, and (ii) presents less than a third of a material expected.</td>
</tr>
<tr>
<td>0</td>
<td>Answer contains nothing correct that is relevant to question. Mark to be given where the work is discovered not to be that of the candidate (plagiarised). Further disciplinary action is usually taken in cases of plagiarism.</td>
</tr>
</tbody>
</table>
### 3.3: Criteria for Assessment of Laboratory Work

These criteria are used to assess all laboratory work during the MSc. Due allowance is made for what is reasonably achievable under laboratory conditions and in the time available.

<table>
<thead>
<tr>
<th>Literal Grade</th>
<th>Percentage Grade</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A*</td>
<td>85-100</td>
<td>Distinction+. Quality and quantity of data comparable to that in research articles published in the best journals. Outstanding presentation of results showing: (i) complete command of the background and context of the work, (ii) a high critical and analytical ability** including an appreciation of the limits of the experimental procedures, possible sources of errors and significance of results, and (iii) originality and evidence of substantial outside reading in discussion. These features also to be shown during oral examination where relevant (e.g. for research projects).</td>
</tr>
<tr>
<td>A+</td>
<td>80</td>
<td>Distinction. Work successfully completed and well presented, showing the above features, but not fully achieving one of them. No significant deficiencies.</td>
</tr>
<tr>
<td>A</td>
<td>76</td>
<td>Merit. Work shows the following features, without fully achieving one of them: (i) shows a clear grasp of background and context of the work, (ii) gives a complete and fully accurate account of the experimental procedures and results, and (iii) shows evidence of some outside reading or of critical or analytical ability** including an understanding of the limits of the experimental procedures and possible sources of errors.</td>
</tr>
<tr>
<td>A-</td>
<td>72</td>
<td>Pass. Work (i) shows a grasp of the background and context of the work, (ii) gives an accurate account of most of the experimental procedures and results, but (iii) does not go beyond that, or goes beyond that but has significant errors of interpretation.</td>
</tr>
<tr>
<td>B+</td>
<td>68</td>
<td>Pass mark</td>
</tr>
<tr>
<td>B</td>
<td>65</td>
<td>Fail. Work (i) shows only a basic grasp of the background and context of the work, and has major errors or omissions, but (ii) presents a mainly accurate account of at least a third of the experimental procedures and results.</td>
</tr>
<tr>
<td>B-</td>
<td>62</td>
<td>Work (i) shows a confused understanding of the experiment, and (ii) presents less than a third of the experimental procedures and results.</td>
</tr>
<tr>
<td>C+</td>
<td>58</td>
<td>30</td>
</tr>
<tr>
<td>C</td>
<td>55</td>
<td>Work (i) is too inaccurate, too irrelevant, or too brief to indicate more than a vague understanding of the experiment, and (ii) presents only about a quarter of the experimental procedures and results.</td>
</tr>
<tr>
<td>C-</td>
<td>52</td>
<td>Work presents only two or three sentences or facts that are correct and relevant to the experiment.</td>
</tr>
<tr>
<td>D+</td>
<td>48</td>
<td>15</td>
</tr>
<tr>
<td>D</td>
<td>45</td>
<td>Work attempted, but no relevant experimental procedures, results or discussion.</td>
</tr>
<tr>
<td>D-</td>
<td>42</td>
<td>5</td>
</tr>
<tr>
<td>F</td>
<td>40</td>
<td>Experiment not attempted, work not handed in or contains nothing correct that is relevant. 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>
3.4: Criteria for Assessment of Work Presented Orally

These criteria are used to assess all oral presentations during your MSc course. Allowance is made for what is reasonably achievable under the conditions of the presentation and viva (resources available, time allowed, etc.).

<table>
<thead>
<tr>
<th>Literal Grade</th>
<th>Percentage Grade</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A*</td>
<td>85-100</td>
<td>Distinction+. Presentation demonstrates: (i) complete understanding of the material to be presented showing high critical or analytical ability**, (ii) clear and logical organisation of the material, (iii) excellent use of appropriate resources and teaching aids, (iv) preparatory work including substantial background reading, and (v) ability to instruct with clarity of exposition and productive engagement with the audience resulting in a very positive learning experience.</td>
</tr>
<tr>
<td>A+</td>
<td>80</td>
<td>Distinction. A very well presented exposition of the subject, showing all the above features, but not fully achieving one of them.</td>
</tr>
<tr>
<td>A</td>
<td>76</td>
<td>Merit. Presentation has the following features, but without fully achieving one of them: (i) shows a clear understanding of the material with an accurate account that demonstrates good critical or analytical ability**, (ii) good use of resources, (iii) evidence of appropriate background reading, and (iv) succeeds in delivering all the relevant material clearly to the audience so that they appreciate its significance.</td>
</tr>
<tr>
<td>A-</td>
<td>72</td>
<td>Pass. Presentation: (i) shows a solid grasp of the material, (ii) gives a mainly accurate account of most of the relevant material, (iii) shows evidence of some background reading, and (iv) successfully delivers most of the material to the audience in a way that they can understand it, but does not go beyond that.</td>
</tr>
<tr>
<td>B+</td>
<td>68</td>
<td>Pass mark</td>
</tr>
<tr>
<td>B</td>
<td>65</td>
<td>Fail. Presentation: (i) shows only a basic grasp of the material (ii) shows evidence of little background reading or preparation, (iii) delivers most of the material accurately but makes errors or omissions resulting in a poor learning experience for the audience.</td>
</tr>
<tr>
<td>B-</td>
<td>62</td>
<td>Presentation: (i) shows that the material has not been understood, (ii) shows no evidence for background reading or preparation, and (iii) presents the material inaccurately and does not increase the audience’s understanding.</td>
</tr>
<tr>
<td>C+</td>
<td>58</td>
<td>Presentation: (i) is too inaccurate, too irrelevant, or too brief to indicate more than a vague understanding of the material, and (ii) only succeeds in misinforming and confusing the audience.</td>
</tr>
<tr>
<td>C</td>
<td>55</td>
<td>Presentation includes very little that is correct and relevant.</td>
</tr>
<tr>
<td>C-</td>
<td>52</td>
<td>Failure to make a presentation at all.</td>
</tr>
<tr>
<td>D+</td>
<td>48</td>
<td><strong>Analytical</strong> = assessing a hypothesis or statement by breaking it down into its elements and examining their inter-relationships and contribution to the whole; cf. <strong>Critical</strong> = judging a hypothesis or conclusion by examining the validity of the evidence adduced for it.</td>
</tr>
<tr>
<td>D</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>D-</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
### 3.5: Criteria for Assessment of Work Presented in Reports

These criteria are used to assess all reports during your MSc course. Allowance is made for what is reasonably achievable under the conditions of the research project report (resources available, time and space allowed, etc.).

<table>
<thead>
<tr>
<th>Literal Grade</th>
<th>Percentage Grade</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A*</td>
<td>85-100</td>
<td>Distinction+. Report demonstrates: (i) complete understanding of the material to be presented showing high critical or analytical ability**, (ii) clear and logical organisation of the material, (iii) excellent use of appropriate resources and teaching aids and (iv) preparatory work including substantial background reading.</td>
</tr>
<tr>
<td>A+</td>
<td>80</td>
<td>Distinction. A very well presented report of the subject, showing all the above features, but not fully achieving one of them.</td>
</tr>
<tr>
<td>A</td>
<td>76</td>
<td>Merit. Report has the following features, but without fully achieving one of them: (i) shows a clear understanding of the material with an accurate account that demonstrates good critical or analytical ability**, (ii) good use of resources, (iii) evidence of appropriate background reading, and (iv) succeeds in delivering all the relevant material clearly to the audience so that they appreciate its significance.</td>
</tr>
<tr>
<td>A-</td>
<td>72</td>
<td>Pass. Report (i) shows a solid grasp of the material, (ii) gives a mainly accurate account of most of the relevant material, (iii) shows evidence of some background reading, and (iv) successfully delivers most of the material to the audience in a way that they can understand it, but does not go beyond that.</td>
</tr>
<tr>
<td>B+</td>
<td>68</td>
<td>Pass mark</td>
</tr>
<tr>
<td>B</td>
<td>65</td>
<td>Fail. Report (i) shows only a basic grasp of the material (ii) shows evidence of little background reading or preparation, (iii) delivers most of the material accurately but makes errors or omissions resulting in a poor learning experience for the audience.</td>
</tr>
<tr>
<td>B-</td>
<td>62</td>
<td>Report: (i) shows that the material has not been understood, (ii) shows no evidence for background reading or preparation, and (iii) presents the material inaccurately and does not increase the audience’s understanding.</td>
</tr>
<tr>
<td>C+</td>
<td>58</td>
<td>Report (i) is too inaccurate, too irrelevant, or too brief to indicate more than a vague understanding of the material, and (ii) only succeeds in misinforming and confusing the audience.</td>
</tr>
<tr>
<td>C</td>
<td>55</td>
<td>Report includes very little that is correct and relevant.</td>
</tr>
<tr>
<td>C-</td>
<td>52</td>
<td>0 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.

### 6.6: Structure of Examination Questions

Where a question provides a breakdown of the weighting attached to parts of a question, the final grade is based on the evaluation of the question as a whole against the above criteria. The breakdown only provides guidance as to the suggested emphasis in your answer for each part of the question.

You will be able to view past exam papers on the VLE, Blackboard.

### 6.7 Guidelines for Exercises

There are marked exercises in the Bioinformatics and Systems Biology II module. The format of the answer will be specified. For Tables, Figures and References you must follow the guidelines for the report in 6.8 below. The word and display items limits for exercises are strict.

These exercises are graded. If the instructions are unclear, then you can of course ask the appropriate staff member. But note that the aim of these exercises is for you to make your decisions as you would in an exam.

### 6.8: Guidelines for Reports

The following are draft guidelines for the project reports. These may be modified to reflect the developments of the project and staff/student discussions.

**General guidelines for all reports**

1. Students are expected to discuss their reports with their supervisors before starting to write up. At least two weeks before submission students should concentrate on completing the report. It is more important to produce a quality report than obtain all the results. You are permitted to show your supervisor your report for general feedback before submission, but please allow sufficient time for your supervisor to provide feedback.

2. The report should be in the format of a paper in a bioinformatics or systems biology journal. Your report should be aimed at readers who work in these areas **but who is not a specialist** in the precise area of your project. In contrast to a scientific paper, your report should clearly and extensively identify in the text what was your contribution to the project. You can use “I” to show your work.

3. Students are advised to make frequent back-up copies of their work. Disk failure can occur,
must be planned for, and are not a valid excuse for late submission. **Projects must be submitted by the deadline.** The penalty for late submission is 10% of the mark per day or part of day.

4. With the exception of the data analysis web-based report: **the font size must be no smaller than 11 point** and the report must be double spaced. Only one side of the paper should be used. Each major new section (e.g. Methods) should start on a new page. Pages must be numbered.

5. It is important to ensure that the report is concise, well laid-out and in scientific style English. Avoid slang and abbreviations such as “won’t”. Remember that “it’s” is an abbreviation for “it is” and “its” is used for the possessive.

6. The project report must include the word count on the title page (the number of words will be checked and failure to comply with the word limit will incur penalties).

7. As this is an MSc project undertaken in a limited time period, we appreciate that positive results (such as an improvement in an algorithm or a statistically significant observation) might not be obtained. Negative results are not penalised. In your report you need to show that you have undertaken a rigorous scientific study and critically evaluated your results.

8. **The format** should follow that of a scientific paper and must include the following sections: Title page, Abstract, Contents page, Abbreviations, Introduction, Conclusion, References, and if required an Appendix. The main part of the report can either follow the standard three sections of Methods, Results and Discussion or can be modified to best present the information. You are advised to discuss such a modification with your supervisor. For example, if there is a series of studies, you are free to report each study in turn as a main section and then under subsections detail the Methods, Results and Discussions.

9. **The Abstract** should be structured (i.e. aims, methods, results, conclusion), be no more than one side of paper (in written reports). Ideally the Abstract should cite some key numerical results rather than just generalities. Making a point in an abstract does not remove the requirement for it to be made elsewhere in the report. The report must be comprehensible even if the abstract is removed.

10. **The Introduction** should provide the necessary background to understand the relevance and topicality of the aims and objectives and your contribution of the research. In particular, how has this project advanced the field.

11. **The Methods** should be sufficiently (but not excessively) detailed, such that the reader can fully understand how the study was performed. It is important to provide an overview of the methodology, for example by a flow chart.

12. **The Results** should provide the necessary data, including negative results, to justify the conclusions drawn. It is important to summarise the results (for example in tables and/or graphs) and not just put in the output of the program. The results should describe testing where appropriate and an assessment of possible errors. Results should also discuss the conclusions drawn from the specific results.

13. **The Discussion** section should place the results into the context of published knowledge and understanding and provide details of future work and more general applications of the knowledge gained from the project. Avoid simply repeating the Results section.

14. **The Conclusion** can provide a brief summary of the key results and provide a brief statement of the impact of the work. Do not repeat previous sections. It is best to have a separate discussion and conclusion.

15. **All mathematical expressions** must have all the symbols defined and used consistently throughout the report.

16. **All Figures** must be clearly labelled with a full explanation of the different information (e.g. colours) presented. Graphs must have the axes labels and the lines in an easy to read presentation **without tiny fonts and faint lines**. Units are required on the axes.
Figures must be referred to in the text i.e. see Figure X.

17. All Tables should be clearly explained with units and numbers given to the appropriate degree of accuracy. Use a sensible number of significant figures. Tables must be referred to in the text i.e. see Table X.

18. Full reference citations must be given: authors, year of publication, journal title, volume and page numbers are all needed. Two reference styles are acceptable. The first is author and date in the text with the references arranged alphabetically by first author’s surname. The second is numbering in the text and in the reference list in order of citation of the reference in the text. Authors’ first names must consistently be by initial only, even if you know the first name. The reference style must be consistent throughout.

19. Abbreviations and glossary. You should list on a separate page all the abbreviations that you have used in your thesis. Many of these are standard, such as DNA, and do not need to be defined. Try not to invent too many abbreviations of your own, as it can make it hard work for your examiner to read. In addition, the first time that you use an abbreviation in the main text, you must define it, e.g: We analysed the number of non-synonymous single nucleotide polymorphisms (nsSNPs). The next time you can simply use the abbreviation, e.g. Table 3 details the number of nsSNPs. You must be consistent. Once you have defined an abbreviation, always use the same abbreviation and do not revert to the original. For some reports, it can be helpful to go beyond a list of abbreviations and provide a glossary explaining technical terms.

20. It is vital that any information including a mathematical derivation taken from another source is duly acknowledged otherwise you are plagiarising. Note many figures in books and papers are subject to copyright and cannot be reduced without copyright permission. The Library can advise but it is probable simplest not to use any published figure directly. You can of course redraw a figure and acknowledge the source upon which it is based.

21. The project report must be written in your own words. Imperial has software that will detect plagiarism – automatic zero mark if plagiarism is detected, with the burden of proof is on the student.

22. Occasionally a paper describing your project work will have been produced for submission to a conference or a journal prior to you writing your report. You cannot use the text from this paper – you must rewrite this for your report - even if you wrote the original paper. If this occurs you must discuss this with the Course Director or Deputy Director at the writing up stage.

23. Details of the submission mechanism of your report will be provided later.
Additional Requirements for Computing Project reports

1. The project consists of a group and an individual report.

**Group report:**

2. The report should be in the format of a manual/documentation including technical and user oriented information. The group report should be aimed at readers who work in bioinformatics or affiliated areas but who are not specialists in the subject cover in the project. Users should be able to read the group report and from it be able to use and continue to develop the work.

3. If needed, especially in the case of new algorithm, the manual can contain portion of code with explanation but it should not be a simple catalogue of the code. You should present the concepts and not just the features. Where relevant, provide examples describing the use of the software/code.

4. The group report should include a description of the problem motivating the project and discuss the parts that still need to be improved or developed.

5. The group report can be as long as it needs to be but should not exceed 40 pages. **In the group report you must use initials at the start of each section to indicate which student undertook the work and who wrote the section. We understand some sections are joint work and this should be indicated.**

**Individual report:**

6. Individual Reports should be between 2,000 and 3,000 words. The maximum is 3,000 words plus diagrams, graphs, figure and table legends, references and appendix (if present). *(Note: References are not included in the word count). There is a maximum of 12 display items (Figures or Tables).*
Additional guidelines for web-based report of data analysis

1. The aim is to present a web page describing the results of your data analysis project.

2. We are looking for use of web tools to enhance the information provided to the viewer of the page. Please use links to other web pages can be used where appropriate. You are free to make use of the multi-media capabilities of web sites; but remember that clarity and statistical soundness are important criteria for marking this project. Choose your colours and font sizes carefully to be attractive.

3. Websites will need to be Firefox compatible and will be hosted on our MSc server. Please check that all your links work under Firefox on this server. Web pages with links that fail will be heavily penalised.

4. Content and presentation will be important. You will need to justify the statistical methods used, explain where the data came from, the objective of the overall project. When presenting statistical information provide an assessment of variability of your results. If this is not possible then outline the reasons for why you have not done this.

5. The web page should be 2,500 words max (excluding references and data in tables). Supplementary material as a plain text file can be provided detailing the method (but is not required). This cannot be more than 1,000 words. Our assessment will focus on the main web.

6. The web page must have a scientific abstract of about 250 words

7. In addition there should be a lay summary of about 250 words explaining the project aimed at a first year science undergraduate.

8. The marking for the project are laboratory work (1/3); scientific report (1/3) and how web resources were effectively used (1/3).

Additional guidelines for Project 3 report

1. The reports should be a maximum of 5,000 words plus diagrams, graphs, figure legends and references. There is a maximum of 12 display items (Figures or Tables). Please indicate on the front the number of words.

2. As this is the report on your final project, we are looking for a demonstration of critical and analytical ability. The best projects would be in a suitable for submission to a journal or a conference with only the most minor of modification (excluding any consideration of whether the report presents positive or negative results).
Writing Resources

There are many guides on the internet about writing styles. Here are a few suggestions. It is worth reading these guides.

A) Structure of a Scientific Report

- Principles of Scientific Writing from Scitext (general guidelines about a paper or report)
- Penn State Writing Guidelines for Engineering and Science Students (general guidelines about a paper or report)
  - http://www.writing.engr.psu.edu/
- The Science of Scientific Writing by Gopen & Swan (some helpful worked examples)
- Cambridge Biomedical Writing Course (general guidelines about a paper or report)

B) Useful guides to correct usage – well worth reading bit by bit on the tube!

- Writing a better scientific paper (note some comments about chatty style not appropriate for Biology, but good hits especially about mistakes non-native English scientists often make)
- ACS writing style guide (many useful examples)
- Guide to Grammar and Style by Jack Lynch (a useful guide to A to Z, can be read through slowly and very sensible)
  - http://andromeda.rutgers.edu/~jlynch/Writing/
- The Elements of Style - William Strunk's classic on writing style (This is the definitive American guide; the concepts are very good but American and sometimes out of date)
  - http://www.bartleby.com/141/

B) Internet resource to check

- The Internet Grammar of English from UCL (useful to check a detail))
  - http://www.ucl.ac.uk/internet-grammar/
Instruction to Candidates for Examinations

Students who are candidates for examinations are asked to note that all examinations are conducted in accordance with the College's Academic Regulations, the Regulations for Programmes of Study and the Examination Regulations.

Instructions for exam candidates can be found here:


Plagiarism

Plagiarism is the presentation of another person’s thoughts, words, images or diagrams as though they were your own. Another form of plagiarism is self-plagiarism, which involves using your own prior work without acknowledging its reuse.

Plagiarism is considered a cheating offence and must be avoided, with particular care on coursework, essays, reports and projects written in your own time and also in open and closed book written examinations.

Where plagiarism is detected in group work, members of that group may be deemed to have collective responsibility for the integrity of work submitted by that group and may be liable for any penalty imposed, proportionate to their contribution.

For further information, please refer to the Academic Misconduct Policy and Procedures section on page 42 of this handbook.
4. Board of Examiners

Board of Examiners

- Professor Michael Sternberg
- Professor Michael Stumpf
- Dr Derek Huntley
- Dr John Pinney

For external examiners

- Dr Sophia Tsoka, King’s College, London
- Dr Nick Monk, Sheffield University

It is common for Master’s level students to have some form of academic or social interaction with their external examiners at some point during or after their studies as well as during the assessment process itself.

It is inappropriate for you to submit complaints or representations direct to external examiners or to seek to influence your external examiners. Inappropriate communication towards an examiner would make you liable for disciplinary action.

A summary of External examiners reports from the previous academic year can be found here:

www.imperial.ac.uk/staff/tools-and-reference/quality-assurance-enhancement/external-examining/information-for-staff
5. Location and Facilities

Imperial has a number of campuses in London and the South East. All have excellent travel links and are easily accessible via public transport.

Your main location of study will be:

📍 South Kensington campus
   Department of Life Sciences
   Sir Ernst Chain Building
   Imperial College London
   South Kensington Campus
   London SW7 2AZ

Facilities

Computer access and printing is available at 310/311, Floor 3, Sir Ernst Chain Building. The Department’s postgraduate office is located at Room 202, Sir Ernst Chain Building and open Monday to Friday, 09.00 – 17.00.

The PG common Room is on Floor 7 of Sir Ernst Chain Building.

Facilities for when you are your project rotation is confirmed nearer the time.

Maps

Campus maps and travel directions are available at:

🔗 www.imperial.ac.uk/visit/campuses

Accessibility

Information about the accessibility of our South Kensington Campus is available online through the DisabledGo access guides:

🔗 www.disabledgo.com/organisations/imperial-college-london-2

Smoke-Free Policy

All Imperial campuses and properties are smoke-free. This means that smoking by staff and students is not permitted on or within 20 metres of College land. The policy covers all College properties, including student accommodation and sports grounds.

🔗 www.imperial.ac.uk/smoke-free
6. Working While Studying

If you are studying full time, the College recommends that you do not work part-time during term time. If this is unavoidable we advise you to work no more than 10–15 hours per week, which should be principally at weekends and not within normal College working hours.

Working in excess of these hours could impact adversely on your studies or health.

If you are here on a Tier 4 visa you can work no more than 20 hours a week during term time. Some sponsors may not permit you to take up work outside your studies and others may specify a limit.

If you are considering part-time work during term time you are strongly advised to discuss this issue with your supervisor or Personal/Senior Personal Postgraduate Tutor. If you are on a Tier 4 visa you should also seek advice from the International Student Support team regarding visa limitations on employment.
7. **Health and Safety**

You are responsible for looking after your own health and safety and that of others affected by your College-related work and leisure activities. You must:

- comply with all local and College policies, procedures and codes of practice and with the arrangements which the College has in place to control health and safety risks.
- ensure that your activities do not present unnecessary or uncontrolled risks to yourself or to others.
- attend appropriate induction and training.
- report any accidents, unsafe circumstances or work-related ill health of which you become aware to the appropriate person.
- not interfere with any equipment provided for Health and Safety.
- inform your supervisor or the person in charge of the activity in cases where you are not confident that you are competent to carry out a work or leisure activity safely, rather than compromise your own safety or the safety of others.

The College’s Health and Safety Statement can be found at:


**Your Departmental safety contact is:**

- Stefan Hoyle
- 518, 5th Floor, Sir Alexander Fleming Building, South Kensington Campus
- 07872 850 018
- s.hoyle@imperial.ac.uk

All new members of the Department must acquaint themselves with the Dept safety web page; https://imperiallondon.sharepoint.com/sites/fons/faculty/safety/LS/SitePages/Newhome.aspx

You MUST also take the following courses:

**Mandatory courses**

- All staff and PG students - Risk Assessment Foundation Training: No enrolment necessary, just start the e-Learning course by clicking on this link and then at end of the course take the multiple choice test: [http://www.imperial.ac.uk/safety/raft/frameset/frameset.htm](http://www.imperial.ac.uk/safety/raft/frameset/frameset.htm)

- All staff and PG students - Month One Safety Training: No enrolment necessary, just start the e-Learning course by clicking on this link and then at the end of the course take the multiple-choice test: [http://www.imperial.ac.uk/safety/most/](http://www.imperial.ac.uk/safety/most/)

**For fire safety training:**

- All PGs do the online Fire Safety and Awareness Training e-Learning course: No enrolment necessary, just start the e-Learning course by clicking on this link and at the end of the course complete the online test: [http://www.imperial.ac.uk/safety/firesafety/](http://www.imperial.ac.uk/safety/firesafety/)
The College Safety Department

The Safety Department offers a range of specialist advice on all aspects of safety. This includes anything which you feel might affect you directly, or which may be associated with teaching, research or support service activities.

The College’s activities range from the use of hazardous materials (biological, chemical and radiological substances) to field work, heavy or awkward lifting, driving, and working alone or late.

All College activities are covered by general health and safety regulations, but higher risk activities will have additional requirements.

The Safety Department helps departments and individuals ensure effective safety management systems are in place throughout the College to comply with specific legal requirements.

Sometimes the management systems fail, and an accident or a near-miss incident arises; it is important that we learn lessons from such situations to prevent recurrence and the Safety Department can support such investigations. All accidents and incidents should be reported online at:

www.imperial.ac.uk/safety

To report concerns or to ask for advice you should contact your programme director, academic supervisor or departmental safety officer in the first instance. You may also contact the Safety Department directly.

Occupational Health requirements

The College Occupational Health Service provides services to:

- protect health at work
- assess and advise on fitness for work
- ensure that health issues are effectively managed

The Service promotes and supports a culture where the physical and psychological health of staff, students and others involved in the College is respected, protected and improved whilst at work.

www.imperial.ac.uk/occupational-health

Lone working & supervision

Students must be appropriately supervised and monitored when working in a laboratory area. Due to their relative inexperience, Undergraduate and Masters Students must not be left to work alone in the lab. Undergraduate and Masters Students cannot supervise each other, an experienced competent member of the lab must be available.

The College Lone Working Policy and Code of Practice must be followed. More guidance and details are here: https://imperiallondon.sharepoint.com/sites/fons/faculty/safety/LS/SitePages/Newhome.aspx via the graphic ‘Lone working and extended hours access’.

College policy on Student Alcohol and Substance misuse

View the College policy on Alcohol and Substance misuse

http://www.imperial.ac.uk/media/imperial-college/current-students/public/Student-Alcohol-and-Substance-misuse-policy.pdf
8. College Policies and Procedures

Regulations for Students
All registered students of the College are subject to the Regulations for Students, the College Academic and Examination Regulations and such other regulations that the College may approve from time to time.

https://www.imperial.ac.uk/about/governance/academic-governance/regulations
https://www.imperial.ac.uk/students/terms-and-conditions

Academic Feedback Policy
We are committed in providing you with timely and appropriate feedback on your academic progress and achievement, enabling you to reflect on your academic progress. During your study you will receive different methods of feedback according to assessment type, discipline, level of study and your individual need. Further guidance on the Policy of Academic Feedback can be found on the Academic Governance website:

http://www.imperial.ac.uk/media/imperial-college/administration-and-support-services/registry/academic-governance/public/academic-policy/academic-feedback/Academic-feedback-policy-for-taught-programmes.pdf

Assessment Timetable

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Module</th>
<th>Start/Deadline</th>
<th>Feedback date and format and provisional marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Python 1</td>
<td>Computing</td>
<td>7 November 2017</td>
<td>21 November 2017</td>
</tr>
<tr>
<td>Protein B</td>
<td>Bioinformatics II</td>
<td>21 November 2017</td>
<td>4 December 2017 including class feedback and provisional mark.</td>
</tr>
<tr>
<td>Genomes</td>
<td>Bioinformatics II</td>
<td>28 November 2017</td>
<td>12 December 2017</td>
</tr>
<tr>
<td>Assignment R</td>
<td>Mathematics</td>
<td>4 December 2017</td>
<td></td>
</tr>
<tr>
<td>Python 2</td>
<td>Computing</td>
<td>5 December 2017</td>
<td>19 December 2017</td>
</tr>
<tr>
<td>Bioinformatics I exam</td>
<td>Bioinformatics I</td>
<td>8 January 2018</td>
<td>28 February 2018, provisional mark</td>
</tr>
<tr>
<td>Bioinformatics II exam</td>
<td>Bioinformatics II</td>
<td>4/5 January 2018</td>
<td>28 February 2018, provisional mark</td>
</tr>
<tr>
<td>Maths exam</td>
<td>Maths</td>
<td>10 January 2018</td>
<td>28 February 2018, provisional mark</td>
</tr>
<tr>
<td>Project 1</td>
<td>Computing</td>
<td>w/c 15 January 2018-27 March 2018</td>
<td>After Oral Presentations and no later than 27</td>
</tr>
<tr>
<td>Project</td>
<td>Description</td>
<td>Status</td>
<td>Feedback Information</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>--------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Group Project and Presentation</td>
<td>10 weeks</td>
<td>April 2018</td>
<td>Feedback from supervisor and general feedback to class. Specific feedback if required.</td>
</tr>
<tr>
<td>Python Timed Assignment</td>
<td>3hr</td>
<td>w/c 9 April 2018</td>
<td></td>
</tr>
<tr>
<td>Project 2 Data Analysis</td>
<td>Web design project</td>
<td>11 weeks</td>
<td>27 March 2018 – 12 June 2018</td>
</tr>
<tr>
<td>Internal Viva</td>
<td>Project 3</td>
<td></td>
<td>12 September 2018 - 20 September 2018</td>
</tr>
</tbody>
</table>

**Feedback**

Students will receive feedback from their exercises in the first term. During your projects you will receive feedback from your supervisor. The class will also receive general feedback on Project 1 and Project 2 and, if there are concerns, specific one to one feedback will be provided.

**Provisional Marks Guidance**

Provisional marks are agreed marks that have yet to be ratified by the Board of Examiners. These results are provisional and are subject to change by the Board of Examiners. The release of provisional marks is permitted except in certain circumstances. Further information can be found in the Guidelines for Issuing Provisional Marks to Students on Taught Programmes:


**Late Submission Policy**

You are responsible for ensuring that you submit your coursework assessments on time and by the published deadline. Any piece of assessed work which is submitted beyond the published deadline (date and time) would be classed as a late submission. Further guidance on Late Submission of Assessments can be found on the Academic Governance website:
Academic Integrity
You are expected to conduct all aspects of your academic life in a professional manner. A full explanation of academic integrity, including information on the College’s approach to plagiarism is available on the College website:


Academic Misconduct Policy and Procedures
It is important that you learn how to properly attribute and acknowledge the work, data and ideas of others. Plagiarism is scientific misconduct, and students whose assessments can be shown to contain plagiarism are subject to penalties as outlined in the College’s Misconduct Policy and Procedures.

www.imperial.ac.uk/about/governance/academic-governance/academic-policy/complaints-appeals-and-discipline

Appeal and Complaints Procedures
We have rigorous regulations in place to ensure assessments are conducted with fairness and consistency. In the event that you believe that you have grounds for complaint about academic or administrative services, or wish to appeal the outcome of an assessment or final degree, we have laid out clear and consistent procedures through which complaints and appeals can be investigated and considered:

www.imperial.ac.uk/about/governance/academic-governance/academic-policy/complaints-appeals-and-discipline

Student Disciplinary Procedure
The College has the right to investigate any allegation of misconduct against a student and may take disciplinary action where it decides, on the balance of probabilities, that a breach of discipline has been committed. The general principles of the Student Disciplinary Procedure are available on the College website:

www.imperial.ac.uk/admin-services/secretariat/college-governance/charters/ordinances/students/

Intellectual Property Rights Policy
For further guidance on the College’s Intellectual Property Rights Policy is available on the College website:

www.imperial.ac.uk/students/enterprising-students/intellectual-property/

Use of IT Facilities
View the Conditions of Use of IT Facilities:

http://www.imperial.ac.uk/admin-services/ict/self-service/computers-printing/staff-computers/conditions-of-use-for-it-facilities/
9. Well-being and Advice

Student Space
The Student Space website is the central point for information on health and well-being.

www.imperial.ac.uk/student-space

Departmental support and College tutors
Your Department has a system of academic and pastoral care in place to make sure you have access to the appropriate support throughout your time here. This includes:

Personal Postgraduate Tutor
The Department's Personal Postgraduate Tutor can offer pastoral support and advice. You can arrange to have a meeting with them at any time during your studies – what you discuss will be completely confidential.

If necessary they will direct you to an appropriate source of support.

Advice services
The tutor system is complemented by a College-wide network of advice and support. This includes a number of specialist services.

Careers Service
The Careers Service has strong links to your Department and you will have a named Careers Consultant and Placement and Internship Adviser who will run both group sessions and individual meetings within your Department. You can arrange to meet with your linked Careers Consultant or Placement and Internship Adviser either in your Department or centrally on Level 5 Sherfield where the Careers Service is based.

Visit the Career Service’s website to:
- Book a careers appointment
- Find resources and advice on successful career planning
Counselling and Mental Health

The Student Counselling and Mental Health Advice Service offers short-term counselling to all registered students. The service is free and confidential. Counsellors are available at the South Kensington, Hammersmith and Silwood Park Campuses.

Financial support and tuition fees

If you’ve got any questions about student financial support (loans, scholarships and research council studentships, US and Canadian loans) then contact the Student Financial Support team:

- 020 7594 9014
- student.funding@imperial.ac.uk

If you suddenly find yourself in financial difficulties or experience an unexpected change in circumstances, you may be eligible to apply for emergency financial help through the Student Support Fund. The Fund offers a one-off payment of up to £2,000 to cover such emergencies as last minute accommodation and travel necessities, equipment and childcare. It does not have to be repaid.

http://www.imperial.ac.uk/students/fees-and-funding/financial-assistance/student-support-fund/

For tuition fees queries, contact the Tuition Fees team:

- 020 7594 8011
- tuition.fees@imperial.ac.uk

Imperial College Union (ICU) Advice Centre

Imperial College Union runs the Advice Centre independently of the College with advisers on hand to provide free, confidential, independent advice on a wide range of welfare issues including housing, money and debt, employment and consumer rights, and personal safety.

www.imperialcollegeunion.org/advice

Student Hub

The Student Hub represents a single point of contact for all key administrative information and support. The Student Hub team can help you with enquiries about:

- Accommodation (including checking contracts for private accommodation)
- Admissions
- International student enquiries
- Research degrees
- Student financial support
- Student records
- Tuition fees

Level 3, Sherfield Building, South Kensington Campus

020 7594 9444
Health Services

NHS Health Centre and finding a doctor

Even if you’re fit and healthy we recommend that you register with a local doctor (GP) as soon as you arrive in London. For help finding your nearest GP see the Student Space website:

www.imperial.ac.uk/student-space/here-for-you/find-a-doctor

There is the Imperial College Health Centre on our South Kensington Campus which you may visit during clinic hours if you’re feeling unwell. Students living within the practice catchment area are encouraged to register with the Centre.

www.imperialcollegehealthcentre.co.uk

NHS Dentist (based in the Imperial College Health Centre)

Imperial College Dental Centre offers a full range of NHS and private treatment options.

www.imperial.ac.uk/student-space/here-for-you/dentist

Disability Support

Disability Advisory Service

The Disability Advisory Service provides confidential advice and support for all disabled students and students with specific learning difficulties.

If you think you may have dyslexia or another specific learning difficulty but have never been formally assessed, the Disability Advisory Service offers initial screening appointments.

Room 566, Level 5, Sherfield Building, South Kensington Campus
020 7594 9755
disabilities@imperial.ac.uk
www.imperial.ac.uk/disability-advisory-service

Departmental Disability Officers

Departmental Disability Officers are the first point of contact within your department. They can apply for additional exam arrangements on your behalf, and will facilitate support within your Department.

Dr Tony Southall is DDO for the Department.

More information on Departmental Disability Officers is available at:

www.imperial.ac.uk/disability-advisory-service/support/ddos

More information on procedures for the consideration of additional exam arrangements in respect of disability is available at:
Library and IT

Information and Communications Technologies (ICT)
If you’re having problems with technology (including computers, laptops and mobile devices), you can get help from ICT’s Service Desk.

📞 020 7594 9000
💻 www.imperial.ac.uk/ict/service-desk

Software shop
The Software shop offers a variety of general and subject specific software programs and packages for free or at a discounted price for Imperial students.

💻 www.imperial.ac.uk/admin-services/ict/shop/software

Library services
The Central Library at South Kensington is open around the clock pretty much all year. Make sure you find out who your departmental librarian is as they’ll be able to help you find resources for your subject area. Also, don’t forget to check out the Library’s range of training workshops and our other campus libraries for access to specialist medicine and life sciences resources. Alongside these physical spaces and resources, the Library provides over 170,000 electronic books, journals and databases available both on and off campus and a free document delivery service to help you source books and articles from around the UK and the rest of the world:

💻 www.imperial.ac.uk/library

 Religious support
The Chaplaincy Multi-faith Centre has chaplains from many different religions, as well as prayer rooms and information on places of worship. In addition, it runs meditation classes and mindfulness workshops for stress management. There is a student-run Islamic prayer room on campus and separate areas available for male and female Muslims.

💻 www.imperial.ac.uk/chaplaincy
Support for International Students

English language support
The Centre for Academic English provides free in-sessional English courses for international students while they are studying. These include classes and workshops on academic language, social language, the four skills of reading, writing, listening and speaking, 1-1 consultations with a tutor to work on a piece of academic writing or an oral presentation, self-study resources in the VLE Blackboard, and the Conversation Project, which partners students with a native-speaker volunteer to practise social and conversational English.

www.imperial.ac.uk/academic-english

International Student Support team
Students from outside the UK make up around half of our student population, so our International student Support team offers year-round support to help our international students settle into Imperial life. This includes UK visa and immigration advice and trips to different places of interest.

www.imperial.ac.uk/study/international-students
The Student Records and Data Team are responsible for the administration and maintenance of the student records for all students studying at the College. This includes enrolments, programme transfers, interruption of studies, withdrawals and processing of examination entry for research degree students. The team also use this information to fulfil reporting duties to the Student Loans Company, Transport for London and the UKVI, as well as other external bodies.

The Team is responsible for the processing of student results and awards on the student record system as well as the production and distribution of academic transcripts and certificates of award.

The Student Records and Data Team produce a variety of standard document requests for both current and previous students including council tax letters, standard statements of attendance and confirmation of degree letters.

**Student records and examinations**

📞 +44 (0)20 7594 7268  
📧 records@imperial.ac.uk

**Degree certificates**

📞 +44 (0)20 7594 8037  
📧 certificates@imperial.ac.uk
11. Work-life Balance

The pace and intensity of postgraduate study at Imperial can be demanding so it's important to find time for outside interests.

Imperial College Union

The Union's range of 375+ student-led clubs, societies and projects is one of the largest of any UK university, opening up lots of ways for you to enjoy your downtime.

www.imperialcollegeunion.org/about-us

Graduate Students' Union

The Graduate Students’ Union is the postgraduate arm of Imperial College Union. The GSU works alongside the Imperial College Union President to ensure that the requirements of postgraduate students are catered for. It also organises a number of academic and social events during the year.

www.imperialgsu.com

Physical Activity Sport

Imperial College has a wide range of sports and activities on offer that cater for all standards and abilities. We have a recreational activity offer, competitive sports teams and an elite sport programme. We are dedicated to ensuring we have a diverse, inclusive and exciting offer for all.

After a one off induction fee of £40 you will get free use of the gym and swimming facilities on our campuses.

www.imperial.ac.uk/sport
12. Student feedback and representation

Feedback from Students

The College and Union is committed to continually improving your education and wider experience and a key part of this is your feedback. Feedback is thoroughly discussed by your student representatives and staff.

Student Representation

Student Representatives are recruited from every department to gather feedback from students to discuss with staff. More information about the role, and instructions on how to become an academic representative, are available on the Imperial College Union (ICU) website.

www.imperialcollegeunion.org/your-union/your-representatives/academic-representatives/overview

Staff-Student Committee

Staff-Student Committees are designed to strengthen understanding and improve the flow of communication between staff and students and, through open dialogue, promote high standards of education and training, in a co-operative and constructive atmosphere. College good practice guidelines for staff-student committees are available here:

www.imperial.ac.uk/about/governance/academic-governance/academic-policy/student-feedback
13. Student Surveys

Your feedback is important to your department, the College and Imperial College Union.

Whilst there are a variety of ways 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 or departmental equivalent
- Student Experience Survey (SES)
- Postgraduate Taught Experience Survey (PTES) – Spring 2018

The PG SOLE lecturer/module survey or equivalent 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.

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 do not use offensive language or make personal, discriminatory or abusive remarks as these may cause offence and may be removed from the results. Whilst this survey is anonymous, please avoid self-identification by referring to personal or other identifying information in your free text comments.

The 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 take part in. This is 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. PTES last ran in spring term 2016 and will run in spring 2018.

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.

As a result of feedback to previous surveys, we have increased the contribution of Mathematics to the total for Bioinformatics II.

The Union’s “You Said, We Did” campaign shows you some of the changes made as a result of survey feedback:

[link](www.imperialcollegeunion.org/you-said-we-did)

If you would like to know more about any of these surveys or see the results from previous surveys, please visit:

[link](www.imperial.ac.uk/students/academic-support/student-surveys/pg-student-surveys)

For further information on surveys, please contact the Registry’s Surveys Team at:

[link](surveys.registrysupport@imperial.ac.uk)
14. And finally

Alumni Services

When you graduate you will be part of a lifelong community of over 190,000 alumni, with access to a range of alumni benefits including:

- discounts on further study at the College and at Imperial College Business School
- alumni email service
- networking events
- access to the Library and online resources
- access to the full range of careers support offered to current students for up to three years after you graduate
- access to our Alumni Visitor Centre at the South Kensington Campus, with free Wifi, complimentary drinks, newspapers and magazines, and daytime left luggage facility

Visit the Alumni website to find out more about your new community, including case studies of other alumni and a directory of local alumni groups in countries across the world.

www.imperial.ac.uk/alumni

Opportunities for Further Study

After you have completed MSc Bioinformatics and Theoretical Systems Biology, you may choose to complete a PhD. Many previous graduates have gone on to complete PhDs in the UK, overseas and at ICL.