

MSc in Physics

MSc in Physics with Shock Physics

MSc in Physics with Nanophotonics

MSc in Physics with Extended Research

Department of Physics

Faculty of Natural Sciences

Handbook (2014/15)

The Graduate School

Welcome from Professor Sue Gibson, Director of the Graduate School

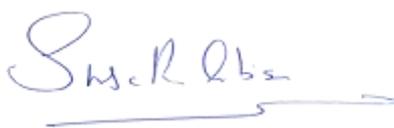


The Graduate School has several roles but our main functions are to provide a broad, effective and innovative range of professional skills development courses and to facilitate interdisciplinary interactions by providing opportunity for students to meet at academic and social events. Whether you wish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

Professional skills courses for Master's students are called "Masterclasses" and they cover a range of themes, for example, presentation skills, academic writing and leadership skills (<http://www3.imperial.ac.uk/graduateschool/currentstudents/professionalskillsmasters/masterclassprogramme>). All Masterclasses are free of charge to Imperial Master's students and I would encourage you to take as many as you can to supplement your academic training. The Graduate School works closely with the Graduate Students' Union (GSU) and is keen to respond to student needs so if there is an area of skills training, or an activity that you would like us to offer, but which is not currently provided, please do get in touch (graduate.school@imperial.ac.uk).

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

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

A handwritten signature in blue ink that reads "Sue Gibson".

Sue Gibson



Welcome from the Graduate Students' Union



Hello and welcome to Imperial. I'm Nida, the President of the Graduate Students' Union for the 2014/15 academic year.

The Graduate Students' Union (GSU) is the representative body within the Imperial College Union for the postgraduate community across all Imperial campuses. The GSU works alongside the Imperial College Union President to ensure that the requirements of postgraduate students are catered for. The GSU also ensures that postgraduates' social and recreational needs are met and holds a number of events during the year.

Postgraduate students at Imperial are at the forefront of the research done and the experience they have as a student should be the best. Therefore, at the GSU we ensure that this happens. The work we do focuses on the academic, welfare and social needs of postgraduates.

If you have any questions or would like to find out more please do not hesitate in getting in touch with me at: gsu.president@imperial.ac.uk.

Nida Mahmud



CONTENTS

Part A – Overview / Introduction

1. Introduction
2. Programme Structure and Timetable
3. Requirements for Programme Completion
4. Calendar of Important dates
5. Ensuring your Programme is a Success – who does what?
6. Expectations
7. Blackboard (VLE)
8. Campus information

Part B – What you can expect

9. Facilities
10. Teaching and Supervision
11. Assessment
12. Pastoral and Academic Support
13. Evaluation and Quality Assurance

Part C – The Modules

14. Core Module
15. Option Modules

Part D – Important Links and Appendices

Part A – Overview / Introduction

1. Introduction

About this Handbook

Welcome to the MSc in Physics. The purpose of this handbook is to provide current and prospective students, and staff, with a detailed description of the MSc in Physics course in the Blackett Laboratory, including assessment and feedback mechanisms. This handbook covers all streams of the MSc, i.e. the MSc in Physics, the MSc in Physics with Shock Physics, the MSc in Physics with Nanophotonics and the MSc in Physics with Extended Research.

This edition of the handbook applies to academic year 2014-15. A copy of the current version is placed on the MSc in Physics website <http://www3.imperial.ac.uk/physics/admissions/pg/msc/mscphysics> in Adobe .pdf format. In the same location you will find a link to the MSc in Physics programme Specifications.

This handbook describes the framework of the course and its assessment but the Course Organiser and/or Course Committee may make changes to detailed procedures if the circumstances indicate this is desirable. Similarly, the Board of Examiners has absolute discretion to modify the criteria described in this handbook, although in practice this would only occur in exceptional circumstances. Students will be notified of any changes prior to their introduction.

The handbook, along with other useful information will be available on the course webpage <http://www3.imperial.ac.uk/physics/admissions/pg/msc/mscphysics>.

Aims of the MSc in Physics programmes

The aims of the MSc in Physics programmes are to:

- attract well-qualified Bachelor level students and provide an intellectually challenging degree programme;
- provide high quality advanced education in physics beyond Bachelor level within an environment committed to excellence in both teaching and research;
- extend students' knowledge of advanced mathematical methods;
- extend students' core knowledge of physics and provide them with a wide choice of specialist courses in all the main areas of physics;
- lead students to a deep understanding of selected areas of physics at the frontiers of knowledge;
- give students training in appropriate research methods;
- give students the experience of undertaking a major, individual, physics-related project and reporting the results in a full scientific report and viva;
- develop students' skills of communication, both written and oral, to specialised and non-specialised audiences;
- equip students for further academic study at Doctoral level or for other careers as a professional physicist.

About the Department

The Blackett Laboratory is one of the most prestigious postgraduate schools in Physics in the UK. In terms of research it uniquely covers the most comprehensive range of important experimental and theoretical research fields. These extend from astronomy, space and plasma physics to high energy, theoretical and atomic physics. Solid state, laser physics, applied optics and photonics have wide applications, while fields such as quantum information theory may lead to exciting new applications. The Department has extensive facilities and a tremendous range of research topics and uses this expertise to the benefit of MSc students both in terms of the material taught and the wide range of exciting projects available.

The Graduate School

As soon as you begin your postgraduate studies at Imperial College you automatically become a member of the Graduate School. Membership means you become part of a wider community, broadening and enriching your academic experience.

<http://www3.imperial.ac.uk/graduateschool>

2. Programme Structure

The general structure is as follows:

Term 1: Lectures and Self Study Project.

Compulsory courses:

- Advanced Classical Physics (6 ECTS); unless the material in this course has been taught previously and with the agreement of the course organiser, in which case another optional lecture course may be chosen.
- Mathematical Techniques (6 ECTS); this course is offered by the Centre for Doctoral Training in Theory and Simulation and Materials and is called 'Mathematics for Theory of Materials' by their MSc course.
- Self Study Project (6 ECTS); students undertake a literature review of a topic of their choice in physics.
- Students registered for the MSc in Physics with Shock Physics have two extra compulsory courses in the first term, Hydrodynamics and Shocks (6 ECTS) and Introduction to Shock Physics (6 ECTS). These replace two of the optional lecture courses.
- Students registered for the MSc in Physics with Nanophotonics have two extra compulsory courses in the first term, Imaging (6 ECTS) and Plasmonics and Metamaterials (6 ECTS). These replace two of the optional lecture courses.

Optional courses:

- Two or three options from the level 3 and 4 list (including Optics and Photonics, Quantum Fields MSc or CDT lecture courses, with the agreement of the appropriate course organiser) or level 3 list (6 ECTS each). Students take 5 optional lecture courses in total (30 ECTS), of which a maximum of two (including Advanced Classical Physics) may be at level 3. The list of level 3 and 4 courses may be found at

http://www3.imperial.ac.uk/physics/courses/ug/course_lists/all_courses.

The lecture courses given by the other masters level courses are listed on the appropriate course website.

- Selected professional skills courses offered by the Graduate School. Details of the recommended courses will be given at the start of the course.

Term 2: Lectures and Research Skills Training.

Compulsory courses:

- Research Skills Training (6 ECTS); a series of practical work and computer based classes and a short project covering:
 - Labview and interfacing experimental equipment and a computer;
 - Computational algebra and Mathematica;
 - Numerical methods and Matlab.
- The Shock Physics in Context (6 ECTS) course is compulsory for students registered on the MSc in Physics with Shock Physics. This course replaces one of the optional lecture courses

- The Advanced Topics in Nanophotonics (6 ECTS) course is compulsory for students registered on the MSc in Physics with Nanophotonics. This course replaces one of the optional lecture courses.

Optional courses:

- The remaining optional lecture courses.
- The remaining Graduate School professional skills courses.

Term 3 and summer period: Detailed literature review and project work.

- Literature review and project plan (6 ECTS). The student submits a short literature review and project plan at the end of June, outlining the proposed project work and the key literature.
- Full time project work (30 ECTS). The student completes a three month, full time research project.
- Students registered on the MSc in Physics with Extended Research complete and submit the literature review and project plan at the same time as the MSc in Physics students. The full time project (60 ECTS) is carried out during the second academic year.

Additional compulsory courses

All students are required to attend induction meetings and also to complete the online plagiarism awareness course and the online safety training. In addition students are required to attend four Graduate School professional skills courses from the MasterClass programme – see under:

www3.imperial.ac.uk/graduateschool/currentstudents/professionalskillsmasters

3. Requirements for Programme Completion

All students must complete four Graduate School Professional Skills courses and the online plagiarism and safety training courses.

The MSc in Physics, the MSc in Physics with Shock Physics and the MSc in Physics with Nanophotonics are divided into two 'elements':

- Lecture courses - 52% of the total course mark;
- Project work - 48%. Of the total course mark.

The *lecture courses* element consists of two components, the six lecture courses accounting for 46% of the total course mark and the mathematical methods course, which accounts for 6% of the total course mark.

The *project work* element consists of three components, the self study project (6% of the total course mark), the research skills training (6% of the total course mark) and the project (36% of the total course mark).

MSc in Physics / with Shock Physics / with Nanophotonics			
Element	Component	ECTS	Weight %
1. Lecture courses	6 lecture courses	36	46
	Mathematical methods	6	6
2. Project work	Self-study project	6	6
	Research skills training	6	6
	Project	36	36
TOTAL		90	100

The MSc in Physics with Extended Research is divided into three elements:

- Lecture courses – 37.1% of the total course mark;
- Project work (year 1) – 12.9% of the total course mark;
- Project work (year 2) – 50% of the total course mark.

The *lecture courses* element consists of two components, the six lecture courses accounting for 32.8% of the total course mark and the mathematical methods course, which accounts for 4.3% of the total course mark.

The *project work (year 1)* element consists of three components; the self study project, the research skills training and the literature review and project plan (this allows the student to complete the element in the first academic year).

The *project work (year 2)* element consists of a single component.

MSc in Physics with Extended Research			
Element	Component	ECTS	Weight %
1. Lecture courses	6 lecture courses	36	32.8
	Mathematical methods	6	4.3
2. Project work (year 1)	Self-study project	6	4.3
	Research skills training	6	4.3
	Project plan & literature review	6	4.3
3. Project work (year 2)	Project	60	50
TOTAL		120	100

To pass the MSc, the candidate must achieve an aggregate mark of 50% or higher in each element of the MSc. In addition, they must have passed each component with a mark of 40% or higher.

A candidate can be considered for a Merit if the candidate has achieved an aggregate mark of $\geq 60\%$; and a mark of $\geq 60\%$ for all but one of the elements and $\geq 50\%$ for the remaining element.

A candidate can be considered for a Distinction if the candidate has achieved an aggregate mark of $\geq 70\%$; and a mark of $\geq 70\%$ for all but one of the elements and $\geq 60\%$ for the remaining element.

The criteria for passing the MSc, and the award of Merit and Distinction are in line with the 'Regulations for the Examination of Taught Masters Degrees' which can be found at <http://www3.imperial.ac.uk/registry/proceduresandregulations/regulations>.

The College's policy on religious obligations in assessments may be found at <http://www3.imperial.ac.uk/registry/exams>.

4. Calendar of Important dates

For the 2014-15 academic year, the term dates are:

Autumn Term: Saturday 4th October 2014 to Friday 19th December 2014;

Spring Term: Saturday 10th January 2015 to Friday 27th March 2015;

Summer Term: Saturday 25th April 2015 to Wednesday 30th September 2015.

The MSc in Physics with Extended Research follows the standard academic year, and the summer term finishes on Friday 26th June 2015. However, the students will be expected to continue with their project work during the Easter break of the second year and any planned holiday should be discussed in advance with the project supervisor.

The dates for the level 3 and level 4 examinations will be announced during the year, but are typically between mid May and early June. Examinations for courses offered by other MSc/MRes programmes may be at different times.

The *self study* report should be submitted on Friday 16th January 2015, and the presentations will be the following week (dates to be announced).

The presentation of the mini-projects for the *research skills training* course will be on Friday 27th March 2015.

The *literature search and project plan* should be submitted on Monday 22nd June 2015.

For the MSc in Physics, MSc in Physics with Shock Physics and MSc in Physics with Nanophotonics, the *project report* should be submitted in mid-September 2015 (date to be announced). The date for poster session will be announced at the start of the project, but is expected to be 3 – 7 days before the report submission date. The viva is arranged for a mutually convenient time by yourself and your supervisor and assessor.

For the MSc in Physics with Extended Research there is a presentation and progress review in January of the second year. The project report should be submitted in May and the viva is also held in May.

5. Ensuring your Programme is a Success – who does what?

The key staff delivering the MSc courses are:

Course Directors:

Dr Julia Sedgbeer	j.sedgbeer@imperial.ac.uk	47811
Prof Richard Thompson	r.thompson@imperial.ac.uk	43606
Dr Bill Proud (MSc in Physics with Shock Physics)	w.proud@imperial.ac.uk	45898
Prof Stefan Maier (MSc in Physics with Nanophotonics)	s.maier@imperial.ac.uk	46063

Director of Postgraduate Studies:

Prof Stefan Maier

Postgraduate Tutor:

Dr Arnaud Czaja	a.czaja@imperial.ac.uk	41789
-----------------	--	-------

Careers advisor:

Prof Mark Neil	mark.neil@imperial.ac.uk	47611
----------------	--	-------

Department

Postgraduate Student
Representative:

Postgraduate

Administrators:

Ms. Loli Sanchez	l.sanchez@imperial.ac.uk	47512
Dr Andrew Williamson	andrew.williamson@imperial.ac.uk	47631

Ms. Ciara Mulholland (Institute of Shock Physics)	c.mulholland@imperial.ac.uk	41343
---	--	-------

External Examiner: TBA

To call a College number from outside, dial 020 759 plus the Internal phone number (above).

6. Expectations

Our Principles

At its June 2012 meeting the Senate approved a Student Charter for the College, entitled *Our Principles*. The *Principles* were developed by a College Working Group including representatives of all Faculties and undergraduate and postgraduate students.

The *Principles* define the guiding principles of the College community and cover all students, both undergraduate and postgraduate. They are not a legal contract but rather an easily accessible, concise source of information and a clear display of staff, student and ICU collaboration. They will be reviewed annually by the Quality Assurance Advisory Committee.

The *Principles* are available at: <http://www3.imperial.ac.uk/students/ourprinciples>. Each Principle is accompanied by 'drop-down' text, which elaborates upon the overarching statements and provides links to further information.

General Regulations for students

The College's regulation for students may be found at <http://www3.imperial.ac.uk/registry/proceduresandregulations>

Code of Student Discipline

This Code of Student Discipline provides for the hearing of complaints concerning breaches of discipline by students, and for rights of appeal where appropriate, and sets down the penalties that may be imposed, including termination of membership of the College <http://www3.imperial.ac.uk/secretariat/collegedgovernance/provisions/ordinances/e2>

Attendance

The College monitors the attendance of all its students. Students are requested to notify lecturers and the Course Organiser if they become ill. Students are required to provide a medical certificate if they are absent for 3 days or more, including during the summer project. If a student misses an examination because they are ill it is essential that they obtain a medical certificate.

Employment during studies

Please note the College's policy regarding part time employment during your MSc course:

<https://workspace.imperial.ac.uk/registry/Public/Procedures%20and%20Regulations/Police%20and%20Procedures/Student%20Employment%20During%20Studies.pdf>

Progress and Performance

All assessments during the course should be returned within two weeks with a letter grade and comments from the marker. The dissertation is marked after the end of the academic

year; please contact the course organiser for details on how to get feedback on the report. The grades are related to the marks by the following table:

A*	$m \geq 80\%$
A	$70\% \geq m \geq 79.9\%$
B	$60\% \geq m \geq 69.9\%$
C	$50\% \geq m \geq 59.9\%$
D	$40\% \geq m \geq 49.9\%$
E	$30\% \geq m \geq 39.9\%$
F	$m < 30\%$

Complaints

Imperial College aims to give the highest specialised instruction and service to all its students, however, in some cases it recognises that students may not always be satisfied with the service that they have received. If you wish to raise a concern, you should first seek advice from your student representatives and raise the matter with the individual concerned. If you are not satisfied with the outcome, you should consult the College's Registry website which provides clear and consistent procedures that indicate how you can take your comments further:

<http://www3.imperial.ac.uk/registry/proceduresandregulations/policiesandprocedures/complaintsappeals>

7. Blackboard (VLE)

Some of the course material may be published on Blackboard <http://learn.imperial.ac.uk>. You should be registered for the appropriate courses soon after you arrive; if you wish to be registered for further courses please contact andrew.williamson@imperial.ac.uk.

To find out more -

<http://www3.imperial.ac.uk/ict/services/teachingandresearchservices/elearning/vle>

8. Campus information

General information about the College, including maps of the South Kensington campus, may be found at <http://www3.imperial.ac.uk/campusinfo/>.

Directions

Imperial College is located just behind (south of) the Albert Hall in South Kensington. The nearest tube stations are South Kensington and Gloucester Road on the District/Circle Line and High Street Kensington on the Circle Line. South Kensington and Gloucester Road are also on the Piccadilly Line which goes directly to Heathrow Airport.

The Department of Physics is located at the Blackett Laboratory, on the corner of Queen's Gate and Prince Consort Road (the entrance is on this road).

Health and Welfare

www.imperial.ac.uk/students/welfareandadvice/thehealthcentre

The College Health Service may be found at 40 Princes Gardens. Their telephone number is Ext.4-9375/6. For emergencies call Ext.4444. Students may use the Health Service free of charge during normal working hours; the Health Service is open from 8am to 6pm weekdays during term time (but it is closed after 1pm on Tuesdays), and 8am to 5pm out of term. Appointments may be made by calling the above number. Otherwise, there is a triage clinic (appointments not necessary) from 8:30am to 10am and an open clinic from 9:00am to 10:30am, Monday to Friday.

Dental treatment is also provided at the Health Service. It is open from 9am to 6pm. Appointments are usually necessary (call 0207 589 6623). It is generally necessary to pay for dental treatment, although students may be entitled to subsidised care.

We strongly recommend that you register with an NHS general practitioner as soon as you arrive at Imperial, even if you do not normally need to see a doctor. Students who live away from College should register with an NHS general practitioner local to their place of residence, in case they need the doctor to visit them at home, or for medical advice out-of-hours.

If travelling elsewhere in the European Union, you would be advised to obtain an EHIC card

<https://www.ehic.org.uk/Internet/home.do>

prior to your travel, as this will enable you to receive medical treatment at reduced cost. The EHIC is available to all persons resident in the United Kingdom, but non European Union students will need longer to apply.

The contact details for other service are:

Emergency assistance (Medical, Security and Fire, Police, Ambulance) Internal Tel. 4444 (internal)

The Health Centre 020 7584 6301 or 49375
(<http://www.imperialcollegehealthcentre.co.uk>)

The Student Hub (Accommodation) (http://www3.imperial.ac.uk/accommodation)	49444
The Student Counselling service (http://www3.imperial.ac.uk/counselling)	49637
Chaplaincy (Religious support, including other major faiths) (http://www3.imperial.ac.uk/chaplaincy)	49600
Students Union (http://www.imperialcollegeunion.org/)	48060

Sports

The College Sports Centre can be found at 7 Prince's Gardens. Details of facilities, opening time, etc can be found at <http://www3.imperial.ac.uk/sports/ethos>.

Security and Emergencies

Emergencies of all types may be reported to Ext.4444. There are First Aid boxes around the Department and in the laboratories, and your safety induction and literature should give you details on First Aid procedures.

Petty theft happens from time to time. Don't leave valuables lying around and always close and lock the door, even if you go out for just a short time. Make sure that the doors to any rooms containing computers are properly locked if you are one of the last to leave in the evenings or at weekends. Unfortunately, some thefts have been from locked offices, so if you have a laptop, either take it home each night or lock it in a secure place. If you see anyone at all suspicious, call security at the above number.

Part B – What you can expect

9. Facilities

Student's Union

All students at Imperial College are members of the Imperial College Union <http://www.imperialcollegeunion.org/> and the Graduate Student's Union <https://union.ic.ac.uk/presidents/gsu/>. As well as social, sporting and cultural events the Union offers other services such as welfare and housing advice.

The Physics Department has a Postgraduate Committee which represents masters and PhD students and also organises a range of social events throughout the year.

If you wish to represent your fellow students to the College details on how to do so may be found at <https://www.imperialcollegeunion.org/representation>.

Computing

General support and information on using computers at Imperial College is the responsibility of ICT (Information and Communication Technologies division). Information for new students can be found at <http://www3.imperial.ac.uk/ict/services/newstudents>.

All new members of College will be given a College username and email address. The induction pack given to you at the start of your studies will explain how to activate your account – please note you will need your CID number to do this.

General help on computing matters can be obtained from service desk. Their website is at: <http://www3.imperial.ac.uk/ict/serviceDesk>. Their email address is Service.Desk@imperial.ac.uk or they can be contacted by phone on ext. 49000.

Students can use any of the college's public area PCs. There are three public areas in College which are available to MSc students, these are in the central library on level 2, in Mechanical Engineering building on level 4, and the undergraduate computing lab on level 3 Blackett, although undergraduates have priority of use in the latter. Some Halls of Residence have their own computer suites available for residents.

The computer suites have network printers for use by students. Each student has an account to pay for their printing and you must have sufficient credit in this account to print your job. When starting, your account will be given some credit – extra credits can be obtained from the card loaders throughout College

The College has a wireless network, and guidance on connecting your computer to the network can be found at

<http://www3.imperial.ac.uk/ict/services/securitynetworkdatacentreandtelephony/collections/networkconnections/wirelessconnection>

Please note that if you are using your own computer on a College network you are still bound by the College's terms and conditions of use, which you will have to agree to prior to

activating your account and which can be seen at <https://www.imperial.ac.uk/ict/activateaccount/>.

Calculators

The College Board of Graduate Studies has determined that only College-owned approved non-programmable calculators can be used in the written examinations. The Physics Department has approved and can provide calculators, which use algebraic logic. Appropriate arrangements will be made for students wishing to use RPN calculators. However, in all cases, only College-owned calculators may be used in the written examinations and therefore students are advised to either purchase an appropriate calculator or practise on a College-owned calculator before the written examinations.

Library

The Central Library is next to the Sherfield Building. This is an amalgam of the Imperial College and Science Museum Libraries. The catalogue may be accessed from terminals in the Central Library and over the web (starting from the College home page). The Central Library also houses the Haldane Library, with a good general collection (fiction and non-fiction) and a music and DVD library.

Electronic journals are available via the library website:

<http://www3.imperial.ac.uk/library>

Note that the Physics Department does not have its own library.

Food and Drink

Lunch can be bought in the Student Common Room, on Level 2 of the Sherfield Building or downstairs in the Main Dining Room.

Tea, coffee and sandwiches are available in the Physics Common Room, on Level 8 of the Blackett Lab (which also offers an impressive view over London). Due to their large number, MSc students are unfortunately not permitted to use the Maths Department Common Room on Level 5 of the Huxley Building or the Senior Common Room in the Sherfield Building.

A number of sandwich shops, restaurants and pubs, at a range of prices, may be found on Gloucester Road (one block west of Queen's Gate), and around the tube station at South Kensington. Beit Quad and Southside have student bars.

Mail

The Department's postal address is:

Physics Department,
Imperial College London,
South Kensington campus,
London, SW7 2AZ.
UK

If you have any mail to be delivered to the Department, please use your name together with the above address. The mail will be delivered to the PG Administration Office who will contact you.

Telephone

The general college number is 020 7589 5111. The College operator may be obtained by dialling 0. Five-figure internal numbers may be dialled directly on the phone. All extension numbers prefixed with a 4 may be dialled directly by external callers using 020 7594-XXXX, where XXXX is the last four digits of the extension. Extension numbers prefixed with a 5 do not have the direct dialling facility. Use the "People" tab (top right, next to the Search textbox) on the College website to find telephone numbers and offices of members of College. Microsoft Outlook also has contact details for the staff and students.

Lockers

There are lockers available for masters students on Level 0 of the Blackett laboratory. At the start of the academic year, please take a spare locker and email andrew.williamson@imperial.ac.uk the locker number. Instructions on the combination lock should either be in the locker or please contact Andrew Williamson. Please make sure that you remove all items at the end of the academic year and reset your locker code so that it is available to the students the following year. Anything not removed will be disposed of.

10. Teaching and Supervision

The College standard working day is used, with 50-minute lectures commencing on the hour, starting at 09:00 each day and finishing at 5:50pm, with Wednesday afternoons free. Most MSc lectures are in the Blackett Laboratory, Lecture Theatres 2 and 3 on Level 1, though some masters specific classes such as the Mathematical Methods course and the Research Skills Training may be held elsewhere.

Self study projects are selected early in the first term. A list of projects with supervisors is presented, and students can approach the supervisor and both may agree on the project. If the student has their own idea for a project they can approach the course organiser and, if it is agreed the student may approach potential supervisors (with help from the course organiser if needed). If a student has difficulty finding a project, they should speak to the course organiser.

The process is similar for summer projects. In February a list of project with supervisors is presented and students may select project as above. Several projects may be offered by industrial companies or external research organisations; if a student is interested in these projects then a visit and interview are usually arranged prior to either party agreeing to the project – please note the company is not obliged to accept a student.

If you wish to arrange your own project you must speak to the course organiser as soon as possible, **and by the end of February at the latest**. The Department needs to ensure that supervisory, health and safety and intellectual property issues are agreed before the project is approved. It is expected that most projects will have been arranged by the end of the second term, and all should be in place by the start of the examinations.

Safety

All students are issued with the current version of the Blackett Laboratory Safety Booklet at the start of the MSc course, and all students are required to attend the College Laboratory Safety course and pass the online laser safety course <http://www.imperial.ac.uk/safety/lasersafety/>. This is necessary in order to be able to register for the use of lasers in the laboratory.

Projects may be taken in research group laboratories where high-power laser beams or other potentially dangerous equipment such as high-voltage power supplies are routinely in use. Students must read, sign and follow the safety guidelines agreed for each laboratory covering electrical, chemical and laser safety as appropriate and submit the documentation to the course administration at the start of their project (even if the project is theoretical or computational).

The Building Evacuation Signal is an announcement “to leave the building”. When this is heard everyone must leave immediately by the nearest fire exit and wait in the assembly Points (please see <https://workspace.imperial.ac.uk/physics/Public/physicsdocs/about/safety/files/Fire%20Safety%20Info%20-%20Physics.pdf>).

11. Assessment

Assessment of the MSc

Draft examination papers are prepared by the lecturer, moderated by a second member of staff and sent in advance to the External Examiner who reviews them and suggests changes. After discussion with the course lecturers, these changes are usually incorporated into the final papers.

The course marks are reviewed by meetings of the internal assessors. The College requires that individual students cannot be identified by staff present at Examiners meeting and they will be identified only when the results are presented after the External Examiners meeting and when the results are communicated to Registry.

The marks are then forwarded to the External Examiner for information. The Board of Examiners consists of the External Examiner, Dr J. Sedgbeer, Prof. R. Thompson, Prof. S. Maier and Dr W. Proud. The Board of Examiners meet soon after the completion of the course to review all the marks and make final recommendations to the College. It is traditional to send a copy of a selection of the project reports to the External Examiner in advance of this meeting, to provide additional information that might assist the decision process.

A separate meeting will consider any claims for mitigating circumstances (see below) and their recommendations will be reviewed by the appropriate Examiners meeting.

All candidates within 2.5% of a boundary will be considered for promotion by the Board of Examiners.

Written Examinations

For the level 3 and level 4 lecture courses the assessment is by written examination, with the MSc students sitting the examination with the MSci class. The exception is the Computational Physics course, which has assessed exercises in the first term and a test in January.

MSc students taking courses offered by other masters programmes are assessed in the same manner as the students on the course. Details will be given where appropriate.

Research Skills Training

The research skills training consists of four activities:

- (1) LabView and interfacing computers to hardware;
- (2) Computational algebra with Mathematica;
- (3) Numerical methods and Matlab;
- (4) Mini-Project.

Each activity contributes 25% of the component mark. The first three are assessed by exercises during the activity and the mini-project by a demonstration of the working system.

Self-study Project

The self-study module is assessed via oral presentation and a report.

The self-study report is marked by the supervisor.

The final mark for the self-study component is the weighted average of the oral presentation and the written report (weighting 1:4). The letter grade corresponding to this mark is formally fed back to the students.

Mathematical Methods

The assessment of the *mathematical methods* course will be explained at the start of the course.

Project

The project begins with the preparation of a project plan and literature review..

The project work is assessed by:

- A project report (accounting for 60% of the project mark);
- A continuous assessment of the student, completed by the supervisor (accounting for 20% of the project mark);
- Presentation of a poster (accounting for 10% of the project mark);
- A viva with the supervisor and assessor (accounting for 10% of the project mark);

For the MSc in Physics with Extended Research the project work is assessed by

- A project report (accounting for 60% of the project mark);
- A continuous assessment of the student, completed by the supervisor (accounting for 10% of the project mark);
- A progress review (accounting for 10% of the project mark);
- A viva with the supervisor and assessor (accounting for 20% of the project mark);

Students should be aware of the need to give proper credit for the work of others when writing papers, reports, theses, etc. This is particularly important when the work is in collaboration with other persons. The College definition and policy regarding plagiarism can be found [here](#).

With the continuous assessment the supervisor makes an assessment of the student's capabilities and effort on the project against the criteria explained at the start of the activity.

The poster is assessed by the supervisor, assessor and the course organiser (or their deputies if they are not available). The assessment is based on the scientific content of the poster, its layout and the student's discussion of their work.

The viva is assessed by the supervisor and assessor (or their deputies if either is not available).

The literature review and project plan and the project report are marked by the supervisor and assessor.

Detailed guidance on the assessment is given at the start of each activity.

The College policy on the penalty to be imposed for the late submission of assessed work is that late submissions will receive a mark of zero. There are circumstances in which the penalty may be amended. These include legitimate mitigating circumstances which are declared by the student in writing, e.g. illness (see below).

Professional skills

This course involves advice on and activities valued in a working environment (i.e., careers advice, presentation skills). The Graduate School offer a range of courses and these will be publicised during the year. Details can be found at <http://www3.imperial.ac.uk/graduateschool/currentstudents/professionalskillsmasters>. The professional skills courses are not assessed, but MSc students are required to attend the courses specified at the start of term, and attendance is monitored by the Graduate School.

Mitigation and Extenuating Circumstances

The College will consider requests for mitigating and extenuating circumstances that may have affected a student's performance in examinations or other areas of their course (such as submission of reports or other assessed material). Please note that claims for mitigating or extenuating circumstances should be made before, or no later than five days after, the examination and should be supported by documented evidence, if that is available.

Please note that the information regarding your claim for mitigation or extenuation will remain confidential and will only be viewed by the advisory panel which will make a recommendation to the Board of Examiners about your request. You may indicate if there is any information which you DO NOT wish to be released to the Board of Examiners but bear in mind that the more information that is received by the Board the better able they will be to reach an informed decision.

Please contact the course organiser or the postgraduate administrators for further information.

Resitting examinations

For the 12-month MSc programmes, the resit examinations are normally held in the following academic year. For the MSc with Extended Research, the student must pass the first year elements in order to progress to the second year. Therefore resit examinations are taken in September (where they are available). Note that the results of all resit examinations will be capped at the pass mark unless there are mitigating circumstances.

12. Pastoral and Academic Support, Supervisors, College Tutors, Personal Tutors

Student welfare is of particular concern to members of academic staff in departments and divisions, and to warden teams in Halls:

<https://workspace.imperial.ac.uk/registry/public/Procedures%20and%20Regulations/Quality%20Assurance/Academic%20and%20Pastoral%20Support%20of%20Postgraduate%20Taught%20Students.pdf>.

As a student on the MSc in Physics your first point of contact to raise queries or issues should always be your course team, details can be found in [5](#). However, all students also have confidential access - independent of department or division - to the College Tutors regarding academic issues, and all aspects of pastoral care and discipline within the College.

<http://www3.imperial.ac.uk/students/collegetutors>
<http://www3.imperial.ac.uk/students/welfareandadvice>

The Personal tutor for the MSc in Physics is the Postgraduate Tutor. The role of the Personal Tutor is primarily to be the first point of contact for any issues or difficulties that may arise throughout the course. He or she will be able to advise students on selection of courses, career matters, writing recommendation letters, and also any matters of a non-academic nature:

The Postgraduate tutor in the Physics Department is Dr Arnaud Czaja (a.czaja@imperial.ac.uk – ext. 41789), who is available to discuss any matter, personal and academic, in confidence. In addition, the Department's Senior Tutor Prof Danny Segal (d.segal@imperial.ac.uk – ext 47779) may also be able to assist.

If you wish to discuss matters with a female member of staff please contact Prof Lesley Cohen (l.cohen@imperial.ac.uk) or Dr Yvonne Unruh (y.unruh@imperial.ac.uk) who may be able to assist.

Other useful sources of support offered by the College are:

<http://www3.imperial.ac.uk/studenthub> (for general assistance)
<http://www3.imperial.ac.uk/academic-english> (for English language support)
<http://www3.imperial.ac.uk/students/international> (for international students)
<http://www3.imperial.ac.uk/registry> (for academic matters)
<http://www3.imperial.ac.uk/careers> (for careers advice)

13. Evaluation and Quality Assurance

The Department is keen to gather the student's view of their experience and learning while they are here, and to use their feedback to improve the delivery of the courses. The Departmental body with responsibility for the provision of Postgraduate Taught courses is the Postgraduate Masters Committee (PMC), chaired by the Director of Postgraduate Studies.

Postgraduate Masters Committee

The membership of the PMC consists of the course organisers, the student representatives for each Masters course and the Directors of Postgraduate Studies and of Undergraduate Studies. The PMC typically meets twice a year. Each Masters course must elect a student representative early in the autumn term to serve on the PMC. Their role is to inform the PMC of the concerns of the students and to assist in implementing any changes proposed.

As well as the formal monitoring system, students are encouraged to raise any concerns with the course organiser as they arise.

Course Questionnaire

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

- **PG SOLE lecturer/module**
- **Student Experience Survey (SES)**

The PG SOLE lecturer/module survey runs at the end of the Autumn and Spring Terms. This survey is your chance to tell us about the modules you have attended and the lecturers who taught them. Run at the same time as the Autumn Term PG SOLE is the Union's **Student Experience Survey (SES)**. This survey will cover your induction, welfare, pastoral and support services experience. During December you will receive an email in your Imperial College account with a link to the surveys.

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

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

<http://www3.imperial.ac.uk/registry/proceduresandregulations/surveys>

For further information on surveys please contact the Registry's Surveys Team on surveys.registrysupport@imperial.ac.uk

College Monitoring of Courses

Independent of the above, the Graduate School reviews all the Masters courses offered by the College and ensures that they are compliant with statutory requirements and best practice. Details on the processes may be found at

<http://www3.imperial.ac.uk/graduateschool/qualityassurance/masterscourserreviews>.

For further information on surveys please contact the Registry's Surveys Team on surveys.registrysupport@imperial.ac.uk.

Part C – The Modules

14. Core Module:

Information on the lecture courses may be found at:

http://www3.imperial.ac.uk/physics/courses/ug/course_lists/all_courses.

The *Mathematical Methods* course is offered by the MSc in Theory and Simulation of Materials, as their Mathematics for the Theory of Materials course and details may be found at:

<http://www3.imperial.ac.uk/theoryandsimulationofmaterials/programmes/msc/mathematicsforthetheoryofmaterials>

Details on the *Research Skills Training* course will be given at the introduction to the course.

Part D – Important Links and Appendices

15. Marking criteria and template for written work

These will be provided at the start of each course.

16. Marking criteria and template for dissertation

These will be provided at the start of the project.

17. Options Module Choice Form

This will be provided at the start of the course.

18. Graduate School

All MSc students are enrolled in the Graduate School, which is responsible for providing Professional Skills courses and for Quality Assurance. You can find more information about the Graduate School at <http://www3.imperial.ac.uk/graduateschools>.

19. Study guide for Master's students

The College has produced a study guide specifically for masters students. It can be seen at <https://workspace.imperial.ac.uk/college/public/pdfs/ISGMasters.pdf>

20. Postgraduate Open Day

On Wednesday 10th December, the College holds a Postgraduate Open Day, to advertise both Masters and PhD courses. Details of the day may be found at <http://www3.imperial.ac.uk/visit/pgopenday>.

If you are considering continuing to a PhD at Imperial College, you will find it a very useful event. Most Departments and Research Groups have individual opens days, usually in January and details of these are available at the Postgraduate Open Day.

21. The Registry Department

The Registry Department maintains the official records of your studies, and can provide much needed documentation before, during and after your studies. Details may be found at <http://www3.imperial.ac.uk/registry/abouttheregistry>

APPENDIX I: Policy on Scientific Misconduct

The College considers any allegation of scientific misconduct to be a matter of great concern and will investigate any such allegation fully. Given its international reputation and status, the College has a responsibility to the scientific community and to the public at large and therefore, where appropriate, will make public the outcome of any such investigation.

<https://workspace.imperial.ac.uk/registry/Public/Procedures%20and%20Regulations/Police%20and%20Procedures/Examination%20and%20Assessment%20Academic%20Integrity.pdf>

Definitions

The College has adopted the Royal College of Physicians' definitions of scientific misconduct as including piracy, plagiarism and fraud. The following definitions give indicative descriptions of the types of activity covered by this regulation. These descriptions are neither exclusive nor exhaustive:

- a. Piracy is the deliberate exploitation of ideas and concepts from others without acknowledgement.
- b. Plagiarism is the copying of ideas, data or text (or a combination of these) without permission or acknowledgement.
- c. Fraud involves deception—usually, but not exclusively, the invention of data. This could also include the omission from analysis and publication of inconvenient components of a data set.

Other types of scientific misconduct may be separately defined, but the College views them as combinations or sub-types of those defined above. In addition to scientific misconduct, these procedures will also apply to cases of scientific negligence.

Procedures for the Investigation of Allegations of Research Misconduct

See

<http://www3.imperial.ac.uk/secretariat/collegegovernance/provisions/ordinances/d17>.

STATEMENT ON PLAGIARISM

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

Plagiarism, that is, the presentation of another person's thoughts or words as though they were your own, must be avoided, with particular care in coursework, essays and reports written in your own time. Note that you are encouraged to read and criticise the work of others as much as possible. You are expected to incorporate this in your thinking and in your coursework and assessments. But you must acknowledge and label your sources.

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

your bibliography. Departments are able to give advice about the appropriate use and correct acknowledgement of other sources in your own work.

The direct and unacknowledged repetition of your own work which has already been submitted for assessment can constitute self-plagiarism. Where group work is submitted, this should be presented in a way approved by your department. You should therefore consult your tutor or course organiser if you are in any doubt about what is permissible. You should be aware that you have a collective responsibility for the integrity of group work submitted for assessment.

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

Failure to observe these rules may result in an allegation of cheating. Cases of suspected plagiarism will be dealt with under the College's [Examination Offences Policy](#) and may result in a penalty being taken against any student found guilty of plagiarism.

Cheating Offences Policy and Procedures

<http://www3.imperial.ac.uk/registry/exams/examoffences>

Plagiarism advice for postgraduate taught course (Master's) students

<http://www3.imperial.ac.uk/library/subjectsandsupport/plagiarism/pgtaught>

TurnitinUK Plagiarism Detection Service at Imperial College

<http://www3.imperial.ac.uk/ict/services/e-learning/staff/turnitin>

APPENDIX II: Students with disabilities, specific learning difficulties, long-term health issues

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

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

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

Where to find help:

1. **Your Disability Liaison Officer (DLO)** Dr Andrew Williamson (andrew.williamson@imperial.ac.uk, Blackett Laboratory, Room 316, Tel: 020 7594 7631) is your first point of contact within your department and is there to help you with arranging any support within the department that you need. The DLO is also the person who will apply for additional examination arrangements on your behalf. You need to contact him without delay if you think that you may need extra time or other adjustments for your examinations.
<http://www3.imperial.ac.uk/registry/exams/specialexamarrangements>
2. **Disability Advisory Service:** <http://www3.imperial.ac.uk/disabilityadvisoryservice>
The Disability Advisory Service works with individual students no matter what their disability to ensure that they have the support they need. We can also help if you think that you may have an unrecognised study problem such as dyslexia. Our service is both confidential (information about you is only passed on to other people in the university with your agreement) and individual in that any support is tailored to what you need.

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

- Being an advocate on your behalf with others in the College such as your departmental liaison officer senior tutor or exams officer, the accommodation office or the estates department
- Checking that your evidence of disability is appropriate and up-to-date
- Arranging a diagnostic assessment for specific learning difficulties
- Help with applying to the College for the cost of an assessment

- Help with your application for the Disabled Students Allowance (DSA) see below
- Helping students not eligible for the Disabled Students Allowance in obtaining support from other sources
- Help with arranging extra Library support
- Supporting applications for continuing accommodation for your second or later years

3. **Disabled Students Allowance:**

<http://www3.imperial.ac.uk/disabilityadvisoryservice/supportforstudents/dassupport>

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