



# MSc in Statistics

## Course Handbook 2020-21

[Moodle web-board](#)

[Programme contact email](#)

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# Part I

## Programme, Study and Support Information

Welcome to the MSc Statistics at Lancaster

### 1.1 Introduction

Welcome on board the MSc Statistics! This handbook provides an overview of the programmes structure and the modules offered. We are incredibly excited about this coming year, the curriculum, the available pathways and the opportunities that your studies will provide.

As you progress through the year, you will have the opportunity to study a variety of core statistical methods as well as more specialist tools developed for specific fields of application (e.g. clinical trial, longitudinal and survival studies). You will become proficient in using the statistical software R, and in writing up scientific reports to present the results of your studies. You will learn from expert statistical researchers, using teaching materials developed specifically for this programme. We will make extensive use of virtual learning environments (Moodle and Teams) through which you can network with your peers and ask questions of your tutors and lecturers. Outside of study, you will be able to yourself in the Lancaster University community, comprising not just other students on your programme, but also students in Graduate College and the wider university.

### 1.2 Departmental Support

Your single point of contact for all programme and module related enquiries is the [MSc Statistics programme email box](#).

All students will be allocated an Academic Advisor who will support you with any issues related to your studies and direct you to relevant central University services as appropriate. In addition to Academic Advisors, the Director of the MSc Statistics is here to ensure the successful delivery of the programme and to support your academic development throughout the coming year. The Director is in turn supported by the departmental Head of Postgraduate Studies.

Programme Director: [Dr Alex Gibberd](#)

Head of Postgraduate Studies: [Dr Emma Eastoe](#)

Teaching Coordinator: Katie Park Walford

The goal of the academic advisor system is to provide each student with a single advisor for the duration of the year, who

- holds a meeting at the beginning of each term;
- provides help with module choices;
- monitors the student's progress;
- supports the student's career planning;
- signposts the student to services available elsewhere in the university.

Once a term, your academic advisor will invite you for a brief meeting, usually no more than 10 minutes in length. This will give you the chance to discuss any issues that may have arisen, and to ask questions about your studies.

Your advisor will be able to advise you on various matters, and point you in the right direction for others. They are a good person to ask to provide a reference for a potential employer.

It is intended you will build a positive and lasting relationship with your academic advisor. However, it's always possible that difficulties may arise, and the Programme Director is available to help in this event.

## 1.3 Departmental Facilities

Students are strongly encouraged to make the Department and the Postgraduate Statistics Centre their working base. Academic staff, research staff and research students will all be pleased to give informal statistical advice when asked.

Computing facilities are available within the Postgraduate Statistics Centre, as are flexible working and break-out areas aimed at enriching the learning and teaching experience. Modest library facilities are available in the room B35 in the Fylde Building. Kitchen facilities, showers and storage lockers are also available.

[Seminars and Forums](#), which usually describe recent statistical research by internal or visiting speakers, are held regularly during term-time. MSc students are encouraged to, and benefit greatly from, attending a selection of them.

## 1.4 Term Dates

Dates for the three University terms (Michaelmas, Lent and Summer) can be found [here](#).

## 2. Remote Learning

The 2020-21 year will be different to any other as we continue to navigate the changes brought about by the coronavirus (Covid-19) pandemic. In everything it does, Lancaster University will be following the advice given by the UK government to ensure that all students and staff can continue to study and work in a safe environment. Full details of the Lancaster Promise to students, including information on living on campus and flexible learning can be found [here](#).

There is also a set of Frequently Asked Questions about living on campus, including available services and facilities, as well as teaching and assessment which can be found [here](#).

These FAQs will be updated on a regular basis, so [this site](#) is a good first point of call whenever you have a Covid-19 related question.

The Student Services Directory on this website provides information on all services available on campus, and any current changes to their availability.

As part of our flexible learning approach, the first term of the MSc Statistics will be taught using a blend of synchronous (real-time) and asynchronous (pre-recorded) online digital teaching sessions, as well as digital written materials. All material will be made available via Moodle, a Virtual Learning Environment, and Microsoft Teams (e.g. for live streaming, video calls, webinars, remote labs). Further information on both Moodle and Teams is given in Section 3 of this handbook.

For students on campus we will deliver some teaching sessions in person. These will be predominantly computer lab sessions. These smaller group sessions will give you the opportunity to discuss problems and check your understanding with one of our experienced staff members.

We realise that some students will not be able to arrive at Lancaster for the start of term. If this applies to you, then you will still have access to all online materials and teaching sessions (both synchronous and asynchronous) and we also plan to run equivalent remote sessions to all in-person sessions offered on campus.



All students will be taught on campus from January 2021. Further information will be provided nearer the time on the format of teaching sessions in the Lent Term, as this will depend largely on the guidance being given by the UK Government at that time, and also on the central approaches to teaching adopted by the University. All programme-level information will be conveyed to students via Moodle announcements on the [programme web-board](#).

Module-level information will be provided via the individual module pages on Moodle.

# 3. Core Information for Lancaster University

## PG Students

### 3.1 Central Support Services

This course handbook is your first point of call for all programme level information whilst you are studying on the MSc Data Science programme. Lancaster University has a wide range of advice and support services for students; these are provided by Student and Education Services. The main web page is [here](#).

#### Key websites include:

- [The Base - home for all student-based services](#)
- [The University's Immigration and Visa Team for international students](#)
- [On-campus health services](#)
- [Well-being and Mental Health](#)
- [Student finance including fees and living costs](#)
- [International student support](#)

#### Key email addresses:

- [The Base](#)
- [Immigration and Visa Team](#)
- [Counselling and Mental Health](#)

## **Learning zone**

For those students based on campus, the [Learning Zone](#) is located centrally on Alexandra Square and is accessible 24-7. It provides relaxed surroundings for students to work within and bookable 'pods' for meetings, presentations and group work.

## **3.2 IT support**

IT support is provided by [Information Systems Services \(ISS\)](#)

Specific information on services for postgraduate students can be found [here](#)

Some specific services that you may wish to have support in are:

## **Student Portal**

This provides an online gateway to your modules (see Moodle below), university email account, student news and much more. Further information can be found [here](#)

## **Moodle**

This is the virtual learning environment that all lecturers will use to disseminate teaching materials, coursework assessments. It is also where you will submit coursework online. Each module has its own Moodle page, which you have access to once you have enrolled on it. Support for Moodle can be found [here](#)

## **Email**

You are expected to check your Lancaster University email address at least once a day, as this is the way in which lecturers and other members of staff will contact you. Email can be accessed using Outlook Online or the mobile Outlook App. More information can be found [here](#)

## **The iLancaster App**

iLancaster provides easily accessible information on services on and around campus, as well as access to your timetable and teaching information. There are versions for Android, iPhone/iPad and a Desktop version. The App can be viewed and downloaded from [here](#)

Further help and information is available [here](#)

## **Teams**

Microsoft Teams will be where many of your live online teaching sessions take place, including online workshops, webinars and examples classes. Teams can be used for both voice and video calls, and also has facilities for storing files and can be used as an area for backing up your work. More information can be found on the [ISS website for off-campus working](#)

## **Apps Anywhere**

Is used on Windows devices to access many widely used pieces of software. For help please click [here](#).

For ISS contact information, please see [here](#).

## **3.3 Library and Learning Development**

The Faculty of Science and Technology has a learning development team who support students to develop effective study practices and improve their writing skills. Further information and contact details can be found on their [website](#).

There is also a dedicated Moodle page for learning development [here](#)

You can access support for literature searching and using library resources via the Faculty Librarian team. Further information and contact details can be found by

self-enrolling on the **Library skills for Science and Technology** Moodle or visiting the website [here](#).

To find out more about the range of library resources available for students studying Data Science at the University, you can access library subject guides:

- [Mathematics and Statistics subject guide](#)
- [Computing and Communications subject guide](#)

### **3.4 English Language Support**

Dr Helen Hargreaves is the Learning Developer for English for Academic Purposes across the university. Her provision includes regular workshops on different aspects of English for academic study

- English language one-to-ones
- Opportunities to develop spoken English
- Online resources

For up-to-date information and to access resources, enrol on the [English Language Development Moodle](#)

### **3.5 Graduate College**

All postgraduate students are members of Graduate College regardless of whether they are living in on-campus accommodation. [The website for Graduate College](#) contains a lot of information on study, social activities, support services and accommodation.

Specific details of college-based support systems are [here](#)

The College has a dedicated well-being officer who can be contacted on [gradwellbeing@lancaster.ac.uk](mailto:gradwellbeing@lancaster.ac.uk)

For queries about accommodation in Graduate College, contact the [Accommodation Team](#) or see the [full set of contact details](#).

## 3.6 Disabilities Service

[The Disabilities Service](#) provides advice and services for a whole range of disabilities. Where necessary, they will provide information to departments to ensure that teaching and learning activities and assessments are made accessible to individuals with specific needs. You can find out more about the support services available on the following website

Sharing of information with the department is via an Inclusive Learning and Support Plan (ILSP) which is drawn up by the Disabilities Service and agreed with you. It is important that you are fully aware of any additional support that should be made available to you as part of your ILSP.

If you feel that you will require support at any level, then it is important that you register any disability [here](#)

This link also provides guidance on what is classed as a disability and what information is required for registration.

If you feel that you are struggling to adjust to life as a student, either on or off-campus, the [Transitions Team](#) can provide support and advice.

The Transitions Team provides support to students all students, but particularly to those whose circumstances may make it more difficult for them to settle into University life.

## 3.7 Careers Advice

The [University's Careers Service](#) offers an extensive service tailored to your needs. The Careers Service website is located [here](#)

Their professional staff includes specialists in careers information, employer liaison, event management and careers guidance. They work closely with other staff within the university, the Students Union, professional bodies and a broad range of national and international employers to provide a variety of opportunities to help you progress your career goals. The Careers Service is in the Base, just off Alexander Square.

TARGETconnect is an online system administered by Careers and provides students with access to student and graduate vacancies, details of careers events, an appointment booking system to see a careers adviser and the online careers query system. You can log-in to the system [here](#)

The Careers Service also runs bespoke careers workshops for Masters students, see [this website](#) for details

## 3.8 The Students' Union & Student Support Office

[Lancaster University Students Union \(LUSU\)](#) is a body that represents all student views to the University, providing professional, academic and other advice for students. Students registering at Lancaster automatically become members of the Students' Union. There are no financial obligations associated with membership, though you can withdraw from the union if you wish, by completing an opt-out form. Further information on LUSU, including Societies, Services, Sport and Advice, is available on their website

[Contact details](#)

For those based on campus, the LUSU Purple Card is a student discount card. You can apply for this [here](#).

You will be able to pick up your card from the LUSU Welcome Desk in Bowland College, between University House and the Learning Zone.



## 4. The MSc Statistics Course Structure

The Statistics MSc course consists of a series of taught modules (120 credits) followed by the completion of a dissertation (60 credits).

The **taught course component** consists of 10 modules:

- **A core set of four compulsory modules** covering the fundamental theoretical and methodological concepts in statistical modelling and inference on which modern applied statistics relies;
- **A set of five optional modules** (chosen from eight available) covering a range of specialist/advanced statistical methods relevant to the design, analysis and interpretation of observational and experimental data;
- **A compulsory practical skills module** covering the essential skills for the practicing statistician, including, statistical computing, oral and written communication, critical appraisal and statistical consulting.

The **core** and **optional** module titles and respective credit ratings are provided below, as are details of the designated pathways. **Module descriptions are provided in Part 2 of the Handbook.**

The **dissertation component** consists of an in-depth project (60 credits) applying statistical methods to a substantive problem of interest.

## **4.1 Taught Course Structure, Timetabling and Module Credit Weightings**

Collectively, the taught-course component consists of ten taught modules comprising of five Core, compulsory, modules and five Optional modules (chosen from eight available). Students select their optional modules and can opt to follow designated pathways in Environmental Statistics, Medical Statistics and Pharmaceutical Statistics. These topics reflect the research interests and expertise within the Department and prepare students for careers in areas with high demand for trained statisticians.

Core modules are taught in weeks 1 to 10 (Michaelmas term) and have their respective lectures and practical sessions typically timetabled over a five-week period (either weeks 1-5 or weeks 6-10). Each core module consists of 25 contact hours: usually 5 hours in each week of the teaching period.

Optional modules are taught in weeks 11 to 20 (Lent term). With the exception of the Extreme Value Theory module (which runs in weeks 16-20) the optional modules are taught via an intensive mode of teaching, whereby, all lectures and practical sessions are given in a single week and the following week is then utilised to complete a module specific project. The number of contact hours for the optional modules is 20 hours which are typically delivered over four days. Scheduled office hours are also provided to facilitate learning and to provide project support.

The practical skills module, Statistics in Practice, follows its own structure and runs throughout weeks 1 to 20.

## 4.2 Core Modules

All students study the following core modules:

### Weeks 1-20:

- MATH550 Statistics in Practice (10 credits)

### Weeks 1-5:

- MATH551 Likelihood Inference (15 credits)
- MATH552 Generalised Linear Models (15 credits)

### Weeks 6-10:

- MATH553 Bayesian Inference (15 credits)
- MATH554 Computationally Intensive Methods (15 credits)

## 4.3 Optional Study Modules and Pathways

In addition to the core modules students are required to select **five** optional modules from the following list of 10 credit modules:

- MATH562 Extreme Value Theory (E)
- MATH563 Clinical Trials (M,P)
- MATH564 Principles of Epidemiology (M,E,P)
- MATH566 Longitudinal Data Analysis (M,E)
- MATH575 Pharmacological Modelling (P)
- MATH573 Survival and Event History Analysis (M,E,P)
- CHIC563 Geostatistical Modelling (M,E)
- MATH574 Adaptive Methods in Clinical Research (P)

These optional, specialist modules cover a range of advanced statistical methods relevant to the design, analysis and interpretation of observational and experimental data.

The typical **pathways** in Environmental Statistics (E), Medical Statistics (M) and Pharmaceutical Statistics (P) are indicated in brackets.

Module descriptions are provided in Part 2.

## **4.4 Dissertation Project**

The dissertation period (mid-June to early-September) will involve the application of statistical methodology to a substantive problem. This independent project is carried out under the direction of a supervisor. Students must write and submit an individual report to detail their investigations and findings; this report provides the formal evidence for assessment of the dissertation. Projects may be collaborative: recent collaborations include GlaxoSmithKline; AstraZeneca, Wrightington Hospital; Royal Lancaster Infirmary, Leahurst Veterinary Centre, The Department of the Environment and the Christie Hospital. Further information regarding assessment and guidelines are provided in Sections [3.2](#) and [6](#).

## **4.5 Attendance**

For each study module all timetabled lectures, lab sessions and tutorials are compulsory. Tutorials with the MSc Course Director and scheduled career sessions are also compulsory. For all timetabled sessions, attendance is monitored.

Students have to be present at the University for all written examinations which take place in May/June each year. Part-time students undertake examinations for modules studied during the same examination period as full-time students.

## **5. MSc Assessment Arrangements**

### **5.1 Assessment**

Testing of knowledge and understanding is achieved through a range of assessment methods. The practical skills module (MATH550) is assessed entirely via coursework. Presentational skills (written and oral) are implicitly assessed in all modules, explicitly in MATH550 and the dissertation. All remaining modules are assessed via a combination of coursework and formal written examination. The ratio of coursework to exam varies across modules. A diverse range of types of coursework are used, including online quizzes, written or computer-based exercises and both individual and group projects.

The Dissertation is assessed through the final written report. This report is marked against the following criteria: introductory motivation and background; exploratory analysis; use of standard methods; use of advanced methods; referencing and literature use; written presentation and structure. A Dissertation guide (including the marking criteria) is provided to students and supervisors prior to commencement of the dissertation period.

All examinations for modules studied in academic year 20/21 will be timetabled during the main Summer Exam Period in May-June 2021. Provisional exam results will be made available to students in late June 2021. Final results will be communicated by post by late November 2021.

Note that all marks are provisional until formal ratification by the Board of Examiners' which meets in June and October. All MSc courses are at level 7 and credit for a module is given if the overall module mark is 50% or more.

### **5.2 Arrangements for the Dissertation**

The dissertation component carries a weighting of 60 credits at level 7. Each dissertation will be double-marked, and a provisional mark agreed between the two markers. A copy of each dissertation and a brief report (including a provisional

mark) agreed between the two internal markers will then be sent to the External Examiner in advance of the final meeting of the Board of Examiners in October. The deadline for submission of the dissertation is early-September. Part-time students should submit their dissertation by the same deadline stipulated for full-time students in their second year of study.

### **5.3 The Board of Examiners**

The Board of Examiners consists of:

- The External Examiner for the MSc in Statistics,
- The Head of Department,
- The Postgraduate Assessment Officer,
- The Director of Postgraduate Studies,
- The MSc Statistics Director,
- Academic staff of the university who have lectured a contributory module(s)/supervised a dissertation during the year in question.

The Head of Department or their representative will chair this Board. The Assessment Officer is responsible for moderating marks from all lecturers and markers who are not members of the Board. A Teaching Coordinator will service the Board and will liaise with the Assessment Officer, the MSc Statistics Director and the Director of Postgraduate Studies.

## **6. Submission of Coursework, Late Penalties and Plagiarism**

### **6.1 Late submission of assignments and penalties**

There are strict university-wide rules in place for the late submission of assignments. The University's Manual for Academic Regulations and Procedures (MARP) stipulated that 'Work submitted up to three days late without an agreed extension will receive a penalty of 10 percentage points (for example a mark of 62% would become 52%) and zero (non-submission) thereafter'.

Saturdays and Sundays are included as days in this regulation. However, when the third day falls on a Saturday or Sunday, students will have until 10.00 a.m. on Monday to hand in work without receiving further penalty.

Work submitted more than three days late without an agreed extension will be awarded a zero and considered a non-submission and treated according to the standard procedures for failed work.

For regular small components of work when it is necessary to provide feedback quickly, the three-day period within which a graded penalty would be applied to late work may be shortened. Work handed in after the deadline but before [specified time and date when answers are to be released] will be subject to a percentage drop/reduction in letter grade in accordance with the standard regulations.

For pieces of work given a set number of marks, e.g. out of 30, the penalty for late submission will be determined by the department in accordance with the [General Assessment Regulations](#), GR 2.3.7.

### **6.2 Coursework Submissions**

All coursework submission will be via the relevant coursework submission area on the relevant Moodle module pages. For projects, a pdf copy of the project report



should be uploaded. It is expected that the report will be typeset using LaTeX. Online quizzes will be accessed through Moodle.

Submission of handwritten solutions may be permitted for some modules – module lecturers will advise if this is the case. Any handwritten solutions should be clear and legible. The University advises that students use Microsoft Office Lens to record an image of their solutions which can then be uploaded to Moodle.

## 6.3 Plagiarism

Plagiarism occurs when you copy the work of another person and submit this as your own. Examples of plagiarism are copying model solutions from a previous year, copying work from another student, commissioning someone else (internal or external to the university) to complete a coursework for you or copying from online sources. Plagiarism is an extremely serious academic offence. If it is suspected that plagiarism has occurred, then the matter will be referred to the Departmental Academic Officer for investigation. If the Academic Officer believes that there is a case to answer then you be required to attend a hearing with the Academic Officer and the module lecturer. If it is found that plagiarism has occurred then a range of penalties can be applied, including a mark of zero for the coursework. A note of the offence will also be placed in your Student Record.

Further information on plagiarism can be found on the [Student Educational Services website](#)

And in the [Academic Malpractice Regulations and Procedures section of MARP](#) (the University's Manual of Academic Regulations and Procedures)

Information on appropriate referencing of sources can be found [here](#)

The Context section in the tutorial may be particularly helpful as it explains why we should reference.

## 6.4 Exceptional Circumstances

Exceptional circumstances refer to actions or events outside your control which result in any circumstances which can reasonable be shown to have affected your academic performance. Examples of such events might be a severe episode of poor mental or physical health, unexpected increase in caring duties or illness/death of a close relative or friend. Examples of possible impact are missing a coursework deadline (extended or otherwise), meeting a deadline but under-performing compared to usual standards or missing an exam.

It is your responsibility to make those circumstances known to the department by emailing either your Academic Tutor or the [Maths Teaching inbox](#).

You should make every effort to inform the department within 48 hours of the missed deadline unless prevented from doing so by acceptable circumstances, in which case you should inform the department as soon as possible. You will need to provide the department with evidence of the exceptional circumstances as soon as they are able.

When informed of Exceptional Circumstances in reasonable time, the department will try to mitigate for these at the time. Occasionally it is not possible to mitigate fully. In this case, you may submit an Exceptional Circumstances case to the Exceptional Circumstances Committee which meets in Week 29 and again in before the final Exam Board in October. Details on Exceptional Circumstances, and the relevant form, can be found [here](#).

## **7. Dissertation Guidelines**

The dissertation (MATH590) carries a weighting of 60 credits at level 7; corresponding to one-third of the Statistics MSc's final assessment. For full-time students, the dissertation starts following the Summer Exam period (mid-June) with submission in early September.

### **7.1 Format**

The dissertation should be up to 50 pages of A4 typescript, including all figures, tables and appendices. A 12pt font and standard margins should be used. It should be presented in the style of a formal scientific report, with chapters and sections, and including an introduction, conclusions and reference list. Figures and tables should be properly captioned and referenced in the text. The dissertation will be submitted electronically via the submission area on the MATH590 Moodle site.

A 'Dissertation Writing Day' will be held at the start of the dissertation period to discuss good practice in researching and writing. You will also have the opportunity to read and critique several past students' dissertations.

Guidelines and marking criteria are provided by the Dissertation Coordinator to students and supervisors prior to commencing the dissertation.

### **7.2 General Requirements**

The dissertation should be presented in a form suitable for transmission to a company or collaborating department. The student should show understanding of the application area and the purpose of the analysis. The student should perform exploratory data analysis and the adequacy of underlying modelling assumptions should be addressed. The student should select and apply appropriate statistical methods and should report adequate description of non-elementary methods and correct referencing of sources. The student should demonstrate competence in the application of statistical methods that go beyond the scope of undergraduate level

statistics courses. The dissertation should include a clear statement of conclusions appropriate to the original aims of the analysis.

Each student is also required to give a 10-minute oral presentation of the work in their dissertation, followed by questions, at a meeting of all MSc students and staff.

Note it is compulsory for students to attend all MSc Statistics student presentations.

### **7.3 Requirements for a Distinction in the Dissertation**

A distinction level mark (70% or more) may be awarded for the dissertation if, in addition to the requirements for a pass, one or more elements of the following are demonstrated:

- thorough understanding and appropriate application of advanced statistical methods which go beyond the scope of MSc taught components;
- the development of original statistical methodology or a contribution to fuller understanding of existing methodology;
- innovative use of statistical methodology leading to substantive findings which would not readily be obtainable by routine application of standard techniques.

A distinction is typically awarded on the basis that the work is of publishable quality.

## **8. Criteria for Awarding of Degrees**

The pass mark for a Masters degree, Postgraduate Diploma and Postgraduate Certificate is 50% with credit for a module being awarded when the overall mark for the module is 50% or greater.

### **8.1 Degree of MSc in Statistics**

The award of MSc in Statistics requires a mark of 50% in each of the 10 modules studied:

#### **Five Core Theory and Methods modules (totalling 70 credits):**

- MATH550 Statistics in Practice
- MATH551 Likelihood Inference
- MATH552 Generalised Linear Models
- MATH553 Bayesian Inference
- MATH554 Computationally Intensive Methods

#### **Five Specialist Statistical Methods modules from the optional modules (totalling 50 credits):**

- MATH562 Extreme Value Theory
- MATH563 Clinical Trials
- MATH564 Principles of Epidemiology
- CHIC563 Geostatistical Modelling
- MATH566 Longitudinal Data Analysis
- MATH573 Survival and Event History Analysis

- MATH574 Pharmacological Modelling
- MATH575 Adaptive Methods in Clinical Research

together with a mark of 50% or more in the Dissertation (60 credits).

### Condonation

Notwithstanding the above requirements for the award of MSc the Board of Examiners may, at its discretion, condone up to 45 credits providing the module specific mark is not less than 40% and the weighted average mark over the programme is 50% or more.

### **8.1.1 Degree of MSc in Statistics with ‘Merit’**

In addition to the requirements for the award of MSc in Statistics (as detailed in 8.1 above) an ‘MSc in Statistics with Merit’ shall be awarded when the weighted average mark over the programme is 60% or more.

### **8.1.2 Degree of MSc in Statistics with ‘Distinction’**

In addition to the requirements for the award of MSc in Statistics (as detailed in 8.1 above) an ‘MSc in Statistics with Distinction’ shall be awarded when the weighted average mark over the programme is 70% or more.

## **8.2 Re-sits**

A student who fails to achieve a mark of 50% for a module/element in the MSc programme is entitled to one opportunity for reassessment in each failed module/element.

A mark of not more than 50% can be awarded for modules retaken.

The form of the reassessment is at the absolute discretion of the Examination Board, save that the form of reassessment must allow the student a realistic chance of achieving 50% in the re-sit.

Examination resits are held in September of each academic year. You should ensure that you make provision for this in terms of travelling and accommodation. For students with multiple resits there is the option of resitting the following summer. This will result in a 12-month delay in graduation but may be a preferable option in order to give the student the best chance at passing all modules. The decision on when resits should be taken will be made on a case by case basis and will follow discussion between the student and the Programme Director.

A student intending to re-sit failed modules may proceed to the dissertation. Note that in extreme cases a recommendation to work towards a PG Diploma may be given.

A student whose dissertation fails may resubmit a revised dissertation on a similar topic. The submission date will typically be in the January following the October Examination Board.

Note: Students with exceptional circumstance may be offered re-sit examinations or coursework as **first sits**. As such the assessment mark will not be capped at 50%.

### **8.3 Borderline Cases**

Subject to the standard condonation rules above, where the overall weighted average falls within two percentage points of the Merit / Distinction degree award range (i.e. 58% / 68%, respectively) the following rules for degree awards will apply:

#### **58.0% to 59.9%:**

If more than 50% of module credits (i.e. > 90 credits) are at 'Merit level' (i.e. are at 60% or above) the MSc in Statistics will be awarded with Merit.

## 68.0% to 69.9%:

If more than 50% of module credits (i.e. > 90 credits) are at Distinction level (i.e. are at 70% or above) the MSc in Statistics will be awarded with Distinction.

## 8.4 Postgraduate Diploma

A Postgraduate diploma is awarded to students who achieve a mark of 50% or more in each of the 10 taught modules (yielding 120 credits at level 7) but do not complete the dissertation.

### Condonation

Notwithstanding the requirement for the award of Postgraduate Diploma, detailed above, the Board of Examiners may condone, at its discretion, up to 30 credits providing the module specific mark is not less than 40% and the average mark over the 10 modules is 50% or more.

At the discretion of the Board of Examiners, students who do not achieve 120 credits over the 10 taught modules **may be** awarded a Postgraduate Diploma provided **both** the following conditions are satisfied:

- a mark of 50% or more is achieved in modules to the value of 60 credits or more;
- a mark of 50% or more in the dissertation (60 credits)

## 8.5 Postgraduate Certificate

Students who do not meet the requirements for a Postgraduate Diploma may be awarded a Postgraduate Certificate providing at least 60 credits have been awarded (with marks  $\geq 50\%$ ) at the postgraduate level (level 7).

### Condonation



Notwithstanding the requirement for the award of postgraduate certificate, detailed above, the Board of Examiners may condone, at its discretion, up to 20 credits.

## 9. Society Membership

As postgraduate students, you have graduated to a professional standard and you should consider joining one of these four societies: the Royal Statistical Society; Statistician's in the Pharmaceutical Industry, the London Mathematical Society; the Institute of Mathematics and its Applications, to ensure continuing support for the discipline in which you will build your future career and interests.

[The Royal Statistical Society](#)

[Statisticians in the Pharmaceutical Industry \(PSI\)](#)

[The London Mathematical Society](#)

[The Institute of Mathematics and its Applications](#)

Once a graduate of Lancaster University you may also wish to join the alumni:

[Lancaster University Alumni](#)

## **Part II**

### **Taught Module Descriptions**

## **MATH550 Statistics in Practice**

Module Convenors: Dr Clement Lee, Dr Alex Gibberd, Dr Fang Wan and Dr Deborah Costain

Assessment: R programming assignment (30%), scientific writing assignment (30%), SAS assignment (30%), presentation (10%)

Credits: 15

Terms: Michaelmas and Lent

# **MATH551 Likelihood Inference**

Module Convenor: Dr Chris Sherlock

Credits: 15

Assessment: Coursework (Moodle quizzes 20%; open-book test 20%) and exam (60%)

Term: Michaelmas

## **MATH552 Generalised Linear Models**

Module Convenor: Dr Juhyun Park

Credits: 15

Assessment: Coursework (Moodle quizzes 15%; group project 25%) and Exam (60%)

Credits: 15

Term: Michaelmas

Prerequisites: MATH551

## **MATH553 Bayesian Inference**

Module Convenor: Dr Simon Lunagomez

Assessment: Coursework (Moodle quizzes 15%; exercises 25%) and Exam (60%)

Credits: 15

Term: Michaelmas

Prerequisites: MATH551

## **MATH554 Computationally Intensive Methods**

Module Convenor: Dr Chris Sherlock

Assessment: Coursework (Moodle quizzes 10%; project 30%) and Exam (60%)

Credits: 15

Term: Michaelmas

Prerequisites: MATH551 & MATH553

## **MATH562 Extreme Value Theory**

Module Convenor: Dr Emma Eastoe

Assessment: Coursework (weekly exercises 20%; project 30%) and Exam (50%)

Duration: 20 hours

Credits: 10

Term: Lent

Prerequisites: MATH551, MATH552

## **MATH563 Clinical Trials**

Module Convenor: Dr Fang Wan

Assessment: Coursework (50%) and written exam (50%)

Credits: 10

Term: Lent

## **MATH564 Principles of Epidemiology**

Module Convenor: Dr Simon Lunagomez

Assessment: Coursework (Moodle quizzes 15%; coursework 35%) and Exam (50%)

Credits: 10

Term: Lent

## **CHIC563 Geostatistical Modelling**

Module Convenor: Dr Emanuele Giorgi

Assessment: Coursework (90%) and test (10%)

Credits: 10

Term: Lent

Prerequisites: MATH551; MATH552; MATH564

## **MATH566 Longitudinal Data Analysis**

Module Convenor: Dr Fang Wan

Assessment: Coursework (group project 40%) and written exam (60%)

40



Credits: 10

Term: Lent

Prerequisites MATH551; MATH552

## **MATH573 Survival and Event History Analysis**

Lecturers: Dr Kanchan Mukherjee

Assessment: Coursework (50%) and written exam (50%)

Credits: 10

Term: Lent

Pre-requisites: MATH551; MATH552

## **MATH574 Adaptive Methods in Clinical Research**

Module Convenor: Prof Thomas Jaki

Assessment: Coursework (100%)

Credits: 10

Term: Lent

Pre-requisites: MATH551; MATH563

## **MATH575 Pharmacological Modelling**

Module Convenor: Prof Thomas Jaki

Assessment: Coursework (100%)

Credits: 10

Term: Lent

Pre-requisites: MATH551; MATH553; MATH563