



Course Guide for the
Undergraduate Degrees

in

Mathematics and Statistics

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1 General Information

This booklet is a guide prepared by the Department of Statistics for students on the Mathematics and Statistics degrees (GG14, GG17 and G1G3). You should retain this booklet, as you will need to consult it from time to time throughout the year. If you are reading this in hard copy or PDF, please note that the up to date version of this booklet is maintained online:

warwick.ac.uk/stats/courses/handbooks

A further extremely valuable source of information is the University's online information site (insite) available at warwick.ac.uk/insite. From here there are links to all student information and specifically to my.warwick.ac.uk where you can access information and resources that are personal to you. Further information is available from the Department's web page at warwick.ac.uk/stats.

1.1 Background

These days all large organisations, industries, businesses, government departments and other services use mathematical and statistical methods extensively. Consequently the demand for mathematical statisticians has expanded so rapidly in recent years that both within and outside the academic world there is a severe shortage of well-qualified people. The Mathematics and Statistics degrees are designed for those students who want to specialise in both pure Mathematics and Statistics. They are taught jointly by the departments of Mathematics and Statistics — who have been consistently graded very highly in the exercises undertaken by HEFCE (<http://www.hefce.ac.uk/>) to assess the quality of the University research. The degrees possess considerable flexibility and allow the student a wide choice of options in Computing, Operational Research and all the other subjects available to Mathematics students.

1.2 Aims

The Mathematics and Statistics degrees are set out to provide three things: firstly, courses which will stimulate interest in mathematical concepts, with particular reference to the major application areas; secondly, to improve the quality and quantity of mathematically skilled people working, researching and teaching in these areas; thirdly, to satisfy the needs of those students who seek a continuous development of mathematics from school through university to postgraduate application. In common with other mathematical science degree courses at Warwick we aim to:

- Attract well-qualified students.
- Provide an intellectually stimulating environment.

- Help students develop key intellectual skills.
- Provide a challenging education in mathematics/statistics and their applications.
- Produce high quality graduates who are well prepared for the next step of their professional lives whether this involves further research training or moving directly into a career.

Specific aims of these degree courses are to provide:

- modules based on mathematics and statistics suitable for students aiming for a career as a statistician.
- The integrated Masters degrees enable students to study these areas more deeply.

Detailed objectives for each year are to be found at the start of the relevant section.

1.3 BSc in Mathematics and Statistics

This degree provides a thorough grounding in both Mathematics and Statistics, starting with the essential mathematical prerequisites. It is organised to produce graduates who are well trained in both the theory and practice of statistics. Graduates with this degree will find themselves in a good position to pursue a career in statistics or any of the areas using it, including accountancy, actuarial work, industry, management and the Civil Service.

The first year counts 10%, the second year 30% and the third year 60% towards the final BSc degree mark.

1.4 Integrated Masters Degree in Mathematics and Statistics

The Department of Statistics also offers four year integrated Masters degrees in Mathematics and Statistics. Entry to the BSc Masters Mathematics and Statistics (G1G3) degree is at the end of the second year. Thus courses differ from the BSc only in the final two years of the (four year) integrated Masters degree.

The integrated Masters degree requires students to study a minimum of 120 CATS worth of modules at the Masters level and includes a 30 CATS Masters dissertation. This degree provides students with an excellent grounding both in Mathematics and Statistics enabling students to embark on research in statistics and probability whilst also providing them with a wide variety of career opportunities both as statisticians and quantitative scientists.

The first year counts 10%, the second year 20%, the third year 30% and the fourth year 40% towards the Integrated Masters degree mark.

1.5 Careers

Naturally, there is a correspondingly wide choice of career opportunities for Mathematics and Statistics graduates in the spheres of application described above. See Section 8.1 of this Course Guide for detailed information on Careers. Students interested in the possibility of pursuing a career as an actuary should note that the Mathematics and Statistics degree is well received and can exempt them from a number of examinations (see Section 8.9).

1.6 RSS Accreditation

The department is currently in the process of renewing the accreditation of the BSc and the Integrated Master's in Mathematics and Statistics. For students graduating in 2019 both degrees are unconditionally accredited by the Royal Statistical Society.

Graduates* from accredited programmes are entitled (on application) to the award of the Royal Statistical Society's qualification of Graduate Statistician, and with a suitable period of approved professional training and experience may proceed to the full professional status of Chartered Statistician.

*For Undergraduate programmes, at least a Lower Second Class Honours is required to apply for Graduate Statistician status. A HEAR (Higher Education Achievement Report) transcript may be required to identify that conditions have been met.

Further information on the Royal Statistical Society can be found on their webpage:

www.rss.org.uk

2 Summary of Course Regulations

2.1 The Definitive Source for Course Regulations

The definitive Course Regulations for all degree courses in the Department of Statistics are derived from the most recent on-line version of this handbook, which are held on the Department of Statistics website:

warwick.ac.uk/stats/courses/handbooks

The lists of modules and other advice that appear in the printed version are provided as a convenience to students. Some of the information in the printed version of the Course Guide may become outdated as the academic year progresses. The definitive source for the course regulations is therefore the Department of Statistics web page mentioned in the previous paragraph.

2.2 First Year

After completing the first year the students will have:

- Made the transition in learning style and pace from school to university mathematics.
- Been introduced to the basic concepts in university mathematics, including the notion of proof, and the applications of mathematics to problems outside mathematics.
- Laid the foundations of knowledge, understanding and techniques necessary to proceed to the second year.

The minimum and normal load in the first year is **120** CATS points (12 CATS points correspond to the equivalent of one 30 hour lecture module). The maximum load is **140** CATS points. The only exception is that for students taking 24 CATS of Language options the maximum load is **144** CATS points.

You must take the Core modules listed in the following table, (which gives for each module the code, the title, the CATS credit and the term in which it is taught). The core modules in the first year of the Mathematics and Statistics degree amount to 84 CATS credit and you must take optional modules to increase your workload to at least 120 CATS. You may, if you choose, take additional optional modules to increase your load to above 120 CATS.

Additional modules, taking your load over 120 CATS may have no effect on your overall average mark for the year (see Section 5.2 for an explanation of how your average mark is calculated). Bear in mind an extra module is a big commitment and you must be careful not to take on too much.

Any additional modules and the marks you gain in them will appear on your academic record. It can be worth doing additional modules for the skills you gain, as for example, in the case of foreign languages.

Core Modules		CATS	Term
MA106	Linear Algebra	12	2
MA137	Mathematical Analysis	24	1 and 2
MA138	Sets and Numbers	12	1
ST104	Statistical Laboratory	12	2 and 3
ST115	Introduction to Probability	12	2
ST116	Mathematical Techniques	12	1

Optional Modules		CATS
CS126	Design of Information Structures	15
EC106	Introduction to Quantitative Economics	24
IB104	Mathematical Programming I	12

Optional Modules		CATS
MA113	Differential Equations A	6
MA117	Programming for Scientists	12
MA125	Introduction to Geometry	6
MA133	Differential Equations	12
MA134	Geometry and Motion	12
MA136	Introduction to Abstract Algebra	6
PH136	Logic 1: Introduction to Symbolic Logic (for non-Philosophy Students)	15
PH146	Reason, Argument and Analysis	15
PX101	Quantum Phenomena	6
PX144	Introduction to Astronomy	6
PX147	Introduction to Particle Physics	6
PX148	Classical Mechanics and Relativity	12

- The above lists contain all the options available to First Year students on the GG14/G1G3 degrees. These are consistent with the University Course Regulations. Full descriptions of each module can be found online, see Section 2.7.
- When choosing optional modules please consider carefully which modules are pre-requisites for modules you wish to take in later years.
- Some optional modules are only offered subject to availability. In particular, WBS normally restricts module pre-registrations for IB modules to 45 CATS for MathStat and MMathStat students.
- Any modules not listed (including foreign languages) are classed as *unusual options* and permission to take these modules must be obtained by completing an Unusual Option form, which must be returned to the Student Support Office by the specified deadline. For more information and restrictions on unusual options see Section 4.3.1 Unusual Options. The form is available from the Student Support Office or online:

warwick.ac.uk/fac/sci/statistics/courses/currentstudents/forms.

- Taking MA133 Differential Equations and MA134 Geometry and Motion are good ways to open up additional mathematics options in your second and third years. Note that you may only take either MA113 Differential Equations A or MA133 Differential Equations, but not both.
- IB104 Mathematical Programming 1 introduces mathematical optimisation techniques and is a good option to learn about applications of mathematics in business and industry.
- If you are interested in computational topics note that at least one first year

programming module, or the ability to program in a high level language, is a prerequisite for most Computer Science modules. The module MA117 Programming for Scientists satisfies the programming prerequisite for Computer Science options.

- If you are interested in transferring to MORSE at the end of your first year you should take EC106 Introduction to Quantitative Economics and IB104 Mathematical Programming.

Assessment and Examinations

Some modules are assessed wholly or in part on written work submitted during the academic year. The deadlines for submission of such work will be announced by the lecturers and tutors responsible for teaching such modules. Failure to obey these deadlines will entail loss of marks. Most examinations are held in term 3. Exceptions include ST116 which will be examined at the end of Term 1, and MA137 and MA138 which are partially examined at the start of Term 2.

2.3 Second Year

After completing the second year the students will have:

- Covered a range of material in mathematics and statistics and studied some of it in depth.
- Acquired sufficient knowledge and understanding to be in a position to make an informed choice of options in their final years and to have covered the background necessary to pursue these options.

The minimum and normal load in the second year is **120** CATS points. The maximum load is **150** CATS.

Candidates for Honours are required to take at least 120 CATS including the core modules and at least 12 CATS of optional modules from the list below.

Please read the further advice for second year students in Section [2.3.1](#).

<i>Core Modules</i>	<i>CATS</i>	<i>Term</i>
MA258 Mathematical Analysis III	12	1
MA260 Norms, Metrics and Topologies	12	2
ST202 Stochastic Processes	12	2
ST208 Mathematical Methods	12	1
ST218 Mathematical Statistics Part A	12	1
ST219 Mathematical Statistics Part B	12	2
ST221 Linear Statistical Modelling	12	2 and 3

Optional Modules	CATS
ST222 Games, Decisions and Behaviour	12
MA117 Programming for Scientists	12
MA209 Variational Principles	6
MA228 Numerical Analysis	6
MA241 Combinatorics	12
MA243 Geometry	12
MA249 Algebra II: Groups and Rings	12
MA250 PDE	12
MA251 Algebra I: Advanced Linear Algebra	12
MA252 Combinatorial Optimisation	12
MA254 Theory of ODEs	12
MA256 Introduction to Systems Biology	6
MA257 Introduction to Number Theory	12
MA259 Multivariable Calculus	12
CS259 Formal Languages	15
CS260 Algorithms	15
CS262 Logic and Verification	15
EC204 Economics 2	30
EC220 Mathematical Economics 1A	12
EC221 Mathematical Economics 1B	12
IB132 Foundations of Finance	12
IB133 Foundations of Accounting	12
IB207 Mathematical Programming II	12
IB211 Simulation	12
IB217 Starting a Business	6
IE3E1 Introduction to Secondary School Teaching	24
PH136 Logic 1: Introduction to Symbolic Logic (for non-Philosophy Students)	15
PX268 Stars	7.5

For more information about modules offered by the Department of Mathematics see the Mathematics Department Undergraduate handbook: warwick.ac.uk/fac/-/sci/maths/undergrad/ughandbook.

Any modules not listed (including foreign languages) are classed as *unusual options* and permission to take these modules must be obtained by completing an Unusual Option form, which must be returned to the Student Support Office by the specified deadline. For more information and restrictions on unusual options see Section 4.3.1 Unusual Options. The form is available from the Student Support Office or online:

warwick.ac.uk/fac/sci/statistics/courses/currentstudents/forms.

2.3.1 Some Specific Advice for Second Year Students

- When choosing optional modules please consider carefully which modules are pre-requisites for modules you wish to take in later years.
- Some optional modules are only offered subject to availability. In particular, WBS normally restricts module pre-registrations for IB modules to 45 CATS for MathStat and MMathStat students.
- From the academic year 19/20 second year students may not take more than 30 CATS of first year options.
- Students who have taken IB133 Foundations of Accounting may not take ST335 Finance and Financial Reporting.
- Note that IB132 Foundations of Finance is a prerequisite for IB253 Principles of Finance 1 for Statistics students.
- The mathematical models used in Financial Mathematics make very extensive use of probability and stochastic processes. Indeed the whole subject is a combination of knowledge about finance and financial instruments, probability theory and stochastic processes (for the mathematical models) and statistics (for fitting models to data).
- When choosing 2nd year optional modules consider which modules are prerequisites for modules that you wish to take in later years. For the MMathStat degree (warwick.ac.uk/fac/sci/statistics/courses/handbooks/pathwaytomathstat) illustrates example pathways for a number of different specialisations including Financial Mathematics.

2.4 Third Year of the BSc MathStat

After completing the third year of the BSc degree the students will have:

- Developed skills in formulating and solving both abstract and applied problems, and in presenting cogent and logical arguments.
- Developed a strong background in at least one specialism, thus providing a basis for further study or employment in related fields.

The minimum and normal load in the third and final year is **120** CATS points. The maximum load is **150** CATS. Candidates for honours are required to take *at least* 60 CATS points from *List (A)* and *at most* 60 CATS points of modules not appearing on *List (A)*.

Please see important advice for third year students at the end of this section.

List (A)		CATS
ST301	Bayesian Statistics and Decision Theory	15
ST305	Designed Experiments	15
ST318	Probability Theory	15
ST323	Multivariate Statistics	15
ST329	Topics in Statistics	15
ST332	Medical Statistics	15
ST333	Applied Stochastic Processes	15
ST337	Bayesian Forecasting and Intervention	15
ST339	Introduction to Mathematical Finance	15
ST340	Programming for Data Science	15
ST341	Statistical Genetics	15
ST342	Mathematics of Random Events	15
ST343	Topics in Data Science	15
ST344	Professional Practice of Data Analysis	15
List (B)		CATS
ST335	Finance and Financial Reporting	15
CS301	Complexity of Algorithms	15
CS331	Neural Computing	15
CS342	Machine Learning	15
CS356	Approximation and Randomised Algorithms	15
IB211	Simulation	15
IB253	Principles of Finance 1	15
IB254	Principles of Finance 2	15
IB349	Operational Research in Strategic Planning	15
IB352	Applied Optimisation Methods	15
IB3A7	The Practice of Operational Research	15
IB3J2	Decision Making Under Uncertainty	15
IB3J3	Mathematical Game Theory	15
IB3K2	Financial Optimisation (Level 3 module)	15
MA241	Combinatorics	12
MA243	Geometry	12
MA249	Algebra II: Groups and Rings	12
MA250	PDE	12
MA251	Algebra I: Advanced Linear Algebra	12
MA252	Combinatorial Optimisation	12
MA254	Theory of ODEs	12
MA256	Introduction to Systems Biology	6
MA257	Introduction to Number Theory	12
MA259	Multivariable Calculus	12
MA359	Measure Theory	15

List (B)		CATS
MA377	Rings and Modules	15
MA390	Topics in Mathematical Biology	15
MA398	Matrix Analysis and Algorithms	15
MA3A6	Algebraic Number Theory	15
MA3B8	Complex Analysis	15
MA3D1	Fluid Dynamics	15
MA3D4	Fractal Geometry	15
MA3D5	Galois Theory	15
MA3D9	Geometry of Curves and Surfaces	15
MA3E1	Groups and Representations	15
MA3E7	Problem Solving (from 2019/20 offered as Unusual Option only)	15
MA3F1	Introduction to Topology	15
MA3F2	Knot Theory	15
MA3G1	Theory of PDEs	15
MA3G6	Commutative Algebra	15
MA3G7	Functional Analysis I	15
MA3G8	Functional Analysis II	15
MA3H0	Numerical Analysis and PDEs	15
MA3H2	Markov Processes and Percolation Theory	15
MA3H3	Set Theory	15
MA3H7	Control Theory	15
MA3J2	Combinatorics II	15
MA3J3	Bifurcations, Catastrophes and Symmetry	15
MA3J8	Approximation Theory and Applications	15
EC301	Mathematical Economics	15
EC306	Econometrics 2: Time Series	15
EC307	Macroeconomic Policy in the EU	15
EC312	International Economics	15
EC314	Topics in Economic Theory	15
EC331	Research in Applied Economics	30
EC333	Topics in Financial Economics: Theories and International Finance	15
EC334	Topics in Financial Economics: Corporate Finance and Markets	15
EC338	Econometrics 2: Microeconometrics	15
EC341	Mathematical Economics 2: Mechanism Design and Alternative Games	15

2.4.1 Some Specific Advice for Third Year MathStat Students

- For more information about modules offered by the Department of Mathematics see the Mathematics Department Undergraduate handbook: warwick.ac.uk/fac/sci/math/undergrad/ughandbook.
- Some optional modules are only offered subject to availability. For example, Economics modules do not run if the numbers are insufficient, so check with the Economics Department. Also, WBS normally restricts module pre-registrations for IB modules to 45 CATS for MathStat students.
- Caution must be used when selecting modules outside List (A) that sum to more than 60 CATS, as the algorithm used to calculate the end of year marks will not consider combinations of modules which include more than 60 CATS from outside List (A). A detailed description of how to avoid this scenario can be found on the Statistics web site: warwick.ac.uk/fac/sci/statistics/courses/currentstudents/mathstatmodulechoice.
- Students may take at most one of the following: ST339 Introduction to Mathematical Finance **or** EC333 Topics in Financial Economics: Theories and International Finance **or** IB253 Principles of Finance 1
- Students who have taken ST339 Introduction to Mathematical Finance may not take IB254 Principles of Finance 2. Also, students may not take both EC334 Topics in Financial Economics: Corporate Finance and Markets and IB254 Principles of Finance 2.
- Students may not take both ST342 Mathematics of Random Events and MA359 Measure Theory.
- Students electing to take IB3J2 Decision Making under Uncertainty and/or IB3J3 Mathematical Game Theory: Combinatorial and Search Games are required to register directly with the WBS undergraduate office.
- Certain third year options have prerequisites which are not in the compulsory component of the second year. It is the responsibility of each student to be in a position to understand the modules chosen.
- Students should note that in awarding one of the BSc degree classes (see Section 5.8, outcomes a-d) a candidate must achieve marks in that class or higher in whole core and *listed modules* (i.e., modules appearing in List (A) or List (B) of the regulations for the BSc MathStat) taken in the final year equating to at least 48 CATS points in total. In addition, to be awarded an Honours degree students must pass (at the 40% pass mark) whole modules equating to at least 168 credits over years 2 and 3, including at least 80 credits in Year 3.

- Any modules not listed (including foreign languages) are classed as *unusual options* and permission to take these modules must be obtained by completing an Unusual Option form, which must be returned to the Student Support Office by the specified deadline. For more information and restrictions on unusual options see Section 4.3.1 Unusual Options. The form is available from the Student Support Office or online:

warwick.ac.uk/fac/sci/statistics/courses/currentstudents/forms.

- It is a student's responsibility to ensure that the modules they are following are permitted — either because the modules are given explicitly as options by the regulations or because permission has been sought and granted by filling in an unusual option form.

2.5 Third Year of Integrated Masters

G1G3 (BSc Masters Mathematics and Statistics) allows students to take a degree whose title makes explicit the fact that they have covered the material which leads to a Bachelor degree as well as material at Masters level. Entry to G1G3 is at the end of the second year. Thus the integrated Masters degree differs from the BSc only in the final two years of the (four year) course. It provides students with an excellent grounding both in Mathematics and Statistics thus preparing them for a wide variety of careers as quantitative scientists.

The integrated Masters degree is designed with a large degree of flexibility in module choices thus allowing you to tailor the degree to your interests and strengths. You may choose modules that cover a wide spectrum of modules in Mathematics and Statistics. Alternatively, you may choose to focus on a specific area. The Pathways in MMathStat webpage (warwick.ac.uk/fac/sci/statistics/courses/handbooks/pathwaytomathstat) gives some example module plans which illustrate pathways for a number of different specializations. However, you do not have to follow a specific pathway as long as your module plan satisfies the course regulations. Your personal tutor will be able to provide you with further advice on your module choices.

The minimum and normal load in the third year is **120** CATS points. The maximum load is **150** CATS.

Please see important notes for third year MMathStat students at the end of this section.

Students must take the core modules (ST404, either ST342 or MA359, and at least one of ST318, ST333 and ST406, although please note that the latter two mutually exclude each other), at least **30** CATS from *List (A)*, at least **27** CATS from *List (B)*, and an appropriate number of modules selected from the list of

optional modules.

Core Modules		CATS
ST318	Probability Theory	15
	OR	
ST333	Applied Stochastic Processes	15
	OR	
ST406	Applied Stochastic Processes with Advanced Topics	15
ST404	Applied Statistical Modelling	15
ST342	Mathematics of Random Events	15
	OR	
MA359	Measure Theory	15
List (A)		CATS
ST301	Bayesian Statistics and Decision Theory	15
ST305	Designed Experiments	15
ST323	Multivariate Statistics	15
ST329	Topics in Statistics	15
ST332	Medical Statistics	15
ST337	Bayesian Forecasting and Intervention	15
ST339	Introduction to Mathematical Finance	15
ST340	Programming for Data Science	15
ST341	Statistical Genetics	15
ST343	Topics in Data Science	15
ST344	Professional Practice of Data Analysis	15
ST402	Risk Theory	15
ST405	Bayesian Forecasting and Intervention with Advanced Topics	15
ST407	Monte Carlo Methods	15
ST409	Medical Statistics with Advanced Topics	15
ST410	Designed Experiments with Advanced Topics	15
ST411	Dynamic Stochastic Control	15
ST412	Multivariate Statistics with Advanced Topics	15
ST413	Bayesian Statistics and Decision Theory with Advanced Topics	15
ST418	Statistical Genetics with Advanced Topics	15
ST419	Advanced Topics in Data Science	15
List (B)		CATS
MA250	PDE	12
MA251	Algebra I: Advanced Linear Algebra	12

List (B)		CATS
MA254	Theory of ODEs	12
MA257	Introduction to Number Theory	12
MA259	Multivariable Calculus	12
MA377	Rings and Modules	15
MA390	Topics in Mathematical Biology	15
MA398	Matrix Analysis and Algorithms	15
MA3A6	Algebraic Number Theory	15
MA3B8	Complex Analysis	15
MA3D1	Fluid Dynamics	15
MA3D4	Fractal Geometry	15
MA3D5	Galois Theory	15
MA3D9	Geometry of Curves and Surfaces	15
MA3E1	Groups and Representations	15
MA3F1	Introduction to Topology	15
MA3F2	Knot Theory	15
MA3G1	Theory of PDEs	15
MA3G6	Commutative Algebra	15
MA3G7	Functional Analysis I	15
MA3G8	Functional Analysis II	15
MA3H0	Numerical Analysis and PDEs	15
MA3H2	Markov Processes and Percolation Theory	15
MA3H3	Set Theory	15
MA3H5	Manifolds	15
MA3H6	Algebraic Topology	15
MA3H7	Control Theory	15
MA3J2	Combinatorics II	15
MA3J3	Bifurcations, Catastrophes and Symmetry	15
MA3J8	Approximation Theory and Applications	15
MA424	Dynamical Systems	15
MA426	Elliptic Curves	15
MA427	Ergodic Theory	15
MA433	Fourier Analysis	15
MA453	Lie Algebras	15
MA475	Riemann Surfaces	15
MA482	Stochastic Analysis	15
MA4A2	Advanced PDEs	15
MA4A5	Algebraic Geometry	15
MA4A7	Quantum Mechanics (Basic Principles and Probabilistic Methods)	15
MA4C0	Differential Geometry	15

List (B)		CATS
MA4E0	Lie Groups	15
MA4E7	Population Dynamics: Ecology and Epidemiology	15
MA4H4	Geometric Group Theory	15
MA4H8	Ring Theory	15
MA4J0	Advanced Real Analysis	15
MA4J3	Graph Theory	15
MA4L2	Statistical Mechanics	15
MA4L3	Large Deviation Theory	15
Optional Modules		CATS
ST334	Actuarial Methods	15
ST335	Finance and Financial Reporting	15
ST338	Actuarial Models	15
ST345	Life Contingencies	15
CS301	Complexity of Algorithms	15
CS331	Neural Computing	15
CS342	Machine Learning	15
CS356	Approximation and Randomised Algorithms	15
EC301	Mathematical Economics	15
EC306	Econometrics 2: Time Series	15
EC307	Macroeconomic Policy in the EU	15
EC312	International Economics	15
EC314	Topics in Economic Theory	15
EC331	Research in Applied Economics	30
EC333	Topics in Financial Economics: Theories and International Finance	15
EC334	Topics in Financial Economics: Corporate Finance and Markets	15
EC338	Econometrics 2: Microeconometrics	15
EC341	Mathematical Economics 2: Mechanism Design and Alternative Games	15
IB211	Simulation	15
IB253	Principles of Finance 1	15
IB254	Principles of Finance 2	15
IB349	Operational Research in Strategic Planning	15
IB352	Applied Optimisation Methods	15
IB3A7	The Practice of Operational Research	15
IB3J2	Decision Making Under Uncertainty	15
IB3J3	Mathematical Game Theory	15
IB3K2	Financial Optimisation (Level 3 module)	15

Optional Modules		CATS
MA209	Variational Principles	6
MA228	Numerical Analysis	6
MA241	Combinatorics	12
MA243	Geometry	12
MA249	Algebra II: Groups and Rings	12
MA252	Combinatorial Optimisation	12
MA256	Introduction to Systems Biology	6
MA3E7	Problem Solving (from 2019/20 offered as Unusual Option only)	15

2.5.1 Some Specific Advice for Third Year MMathStat Students

- Students registered for G1G3 must take, over their third and fourth years, **at least 120 CATS of level 4+ modules** given by the Departments of Mathematics and Statistics. At least 90 CATS of level 4 should be taken in the fourth year. NB: Level 4+ should be interpreted as:- xx4xx, xx5xx, xx9xx
- For more information about modules offered by the Department of Mathematics see the Mathematics Department Undergraduate handbook: warwick.ac.uk/fac/sci/maths/undergrad/ughandbook.
- Some optional modules are only offered subject to availability. For example, Economics modules do not run if the numbers are insufficient, so check with the Economics Department. Also, WBS normally restricts module pre-registrations for IB modules to 45 CATS for MMathStat students.
- Certain third and final year options have prerequisites which are not in the compulsory component of the second year. It is the responsibility of each student to be in a position to understand the modules chosen.
- It is a student's responsibility to ensure that the modules they are following are permitted — either because the modules are given explicitly as options by the regulations or because permission has been sought and granted by filling in an unusual option form.
- Any modules not listed (including foreign languages) are classed as *unusual options* and permission to take these modules must be obtained by completing an Unusual Option form, which must be returned to the Student Support Office by the specified deadline. For more information and restrictions on unusual options see Section 4.3.1 Unusual Options. The form is available from the Student Support Office or online:

warwick.ac.uk/fac/sci/statistics/courses/currentstudents/forms.

- Consider possible choices of fourth year options when choosing your third year options. The Pathways in MMathStat webpage (warwick.ac.uk/fac/sci/statistics/courses/handbooks/pathwaytomathstat) provides examples of third and fourth year module combinations for various specialisations. You should bear in mind that the module positions (whether they are in Term 1 or 2) do vary slightly from year to year and the positions published in this book will not necessarily be the same next year.
- You are not allowed to take both the level 3 and level 4 version of the same module, eg ST323 Multivariate Statistics in Year 3 and then ST412 Multivariate Statistics with Advanced Topics or ST343 Topics in Data Science in Year 3 and ST419 Advanced Topics in Data Science in Year 4. So, again, when choosing your 3rd year options it is advisable to consider your 4th year options at the same time.
- Students may not take both ST342 Mathematics of Random Events and MA359 Measure Theory.
- Students who have taken IB133 Foundations of Accounting may not take ST335 Finance and Financial Reporting.
- Students may take at most one of the following: ST339 Introduction to Mathematical Finance **or** EC333 Topics in Financial Economics: Theories and International Finance **or** IB253 Principles of Finance 1.
- Students electing to take IB3J2 Decision Making under Uncertainty and/or IB3J3 Mathematical Game Theory: Combinatorial and Search Games are required to register directly with the WBS undergraduate office.
- Students who have taken ST339 Introduction to Mathematical Finance may not take IB254 Principles of Finance 2. Also, students may not take both EC334 Topics in Financial Economics: Corporate Finance and Markets and IB254 Principles of Finance 2.
- An integrated Masters student whose Year 3 mark is under 55% will normally be required to graduate with a BSc by the Exam Board. Moreover, students must pass 60 CATS to be permitted to proceed to the final year.
- For the Integrated Masters degree, in awarding one of the degree classes (see Section 5.8, outcomes a,b,c,d) the Board of Examiners expects to see marks in that class or higher in at least 48 CATS in Year 4, from whole core and listed modules (i.e. modules listed as Core or List (A) from the fourth year). Note that modules selected from the Optional module list do **not** count as listed modules. In addition, to qualify for an Integrated Masters degree a candidate must pass (at the 40% module pass mark) at least 258 CATS in Years 2-4, including at least 90 CATS in the final year.

2.6 Fourth Year of Integrated Masters

After completing the third and fourth year of the integrated Masters degree the students will have:

- Developed skills in formulating and solving both abstract and applied problems, and in presenting cogent and logical arguments.
- Developed a strong background in at least one specialism, thus providing a basis for further study or employment in related fields.

The minimum and normal load in the fourth year is **120** CATS points. The maximum load is **150** CATS.

Students must take the core modules, at least **45** CATS from *List (A)*, and an appropriate number of modules selected from the list of optional modules.

<i>Core Modules</i>		<i>CATS</i>
ST415	Statistics Masters Dissertation	30
<i>List (A)</i>		<i>CATS</i>
ST301	Bayesian Statistics and Decision Theory	15
ST305	Designed Experiments	15
ST318	Probability Theory	15
ST323	Multivariate Statistics	15
ST329	Topics in Statistics	15
ST332	Medical Statistics	15
ST333	Applied Stochastic Processes	15
ST337	Bayesian Forecasting and Intervention	15
ST339	Introduction to Mathematical Finance	15
ST340	Programming for Data Science	15
ST341	Statistical Genetics	15
ST343	Topics in Data Science	15
ST401	Stochastic Methods in Finance	15
ST402	Risk Theory	15
ST403	Brownian Motion	15
ST405	Bayesian Forecasting and Intervention with Advanced Topics	15
ST406	Applied Stochastic Processes with Advanced Topics	15
ST407	Monte Carlo Methods	15
ST409	Medical Statistics with Advanced Topics	15
ST410	Designed Experiments with Advanced Topics	15
ST411	Dynamic Stochastic Control	15
ST412	Multivariate Statistics with Advanced Topics	15

List (A)		CATS
ST413	Bayesian Statistics and Decision Theory with Advanced Topics	15
ST418	Statistical Genetics with Advanced Topics	15
ST419	Advanced Topics in Data Science	15
ST906	Financial Time Series	15
ST909	Continuous Time Finance for Interest Rate Models	15
ST958	Topics in Mathematical Finance	15
MA377	Rings and Modules	15
MA390	Topics in Mathematical Biology	15
MA398	Matrix Analysis and Algorithms	15
MA3A6	Algebraic Number Theory	15
MA3B8	Complex Analysis	15
MA3D1	Fluid Dynamics	15
MA3D4	Fractal Geometry	15
MA3D5	Galois Theory	15
MA3D9	Geometry of Curves and Surfaces	15
MA3E1	Groups and Representations	15
MA3F1	Introduction to Topology	15
MA3F2	Knot Theory	15
MA3G1	Theory of PDEs	15
MA3G6	Commutative Algebra	15
MA3G7	Functional Analysis I	15
MA3G8	Functional Analysis II	15
MA3H0	Numerical Analysis and PDEs	15
MA3H2	Markov Processes and Percolation Theory	15
MA3H3	Set Theory	15
MA3H5	Manifolds	15
MA3H6	Algebraic Topology	15
MA3H7	Control Theory	15
MA3J2	Combinatorics II	15
MA3J3	Bifurcations, Catastrophes and Symmetry	15
MA3J8	Approximation Theory and Applications	15
MA424	Dynamical Systems	15
MA426	Elliptic Curves	15
MA427	Ergodic Theory	15
MA433	Fourier Analysis	15
MA453	Lie Algebras	15
MA475	Riemann Surfaces	15
MA482	Stochastic Analysis	15

List (A)		CATS
MA4A2	Advanced PDEs	15
MA4A5	Algebraic Geometry	15
MA4A7	Quantum Mechanics (Basic Principles and Probabilistic Methods)	15
MA4C0	Differential Geometry	15
MA4E0	Lie Groups	15
MA4E7	Population Dynamics: Ecology and Epidemiology	15
MA4G6	Calculus of Variations	15
MA4H4	Geometric Group Theory	15
MA4H8	Ring Theory	15
MA4J0	Advanced Real Analysis	15
MA4J3	Graph Theory	15
MA4L2	Statistical Mechanics	15
MA4L3	Large Deviation Theory	15
Optional Modules		CATS
ST334	Actuarial Methods	15
ST335	Finance and Financial Reporting	15
ST338	Actuarial Models	15
ST345	Life Contingencies	15
CS301	Complexity of Algorithms	15
CS331	Neural Computing	15
CS342	Machine Learning	15
CS356	Approximation and Randomised Algorithms	15
CS402	High Performance Computing	15
CS404	Agent Based Systems	15
CS904	Computational Biology	15
EC301	Mathematical Economics	15
EC306	Econometrics 2: Time Series	15
EC307	Macroeconomic Policy in the EU	15
EC312	International Economics	15
EC314	Topics in Economic Theory	15
EC331	Research in Applied Economics	30
EC333	Topics in Financial Economics: Theories and International Finance	15
EC334	Topics in Financial Economics: Corporate Finance and Markets	15
EC338	Econometrics 2: Microeconometrics	15
EC341	Mathematical Economics 2: Mechanism Design and Alternative Games	15

Optional Modules		CATS
IB253	Principles of Finance 1	15
IB254	Principles of Finance 2	15
IB211	Simulation	15
IB349	Operational Research in Strategic Planning	15
IB352	Applied Optimisation Methods	15
IB3A7	The Practice of Operational Research	15
IB3J2	Decision Making Under Uncertainty	15
IB3J3	Mathematical Game Theory	15
IB3K2	Financial Optimisation (Level 3 module)	15
MA209	Variational Principles	6
MA228	Numerical Analysis	6
MA241	Combinatorics	12
MA243	Geometry	12
MA249	Algebra II: Groups and Rings	12
MA252	Combinatorial Optimisation	12
MA256	Introduction to Systems Biology	6
MA3E7	Problem Solving (from 2019/20 offered as Unusual Option only)	15

2.6.1 Some Specific Advice for Fourth Year MMathStat Students

- Students registered for G1G3 must take, over their third and fourth years, **at least 120 CATS of level 4+ modules** given by the Departments of Mathematics and Statistics. At least 90 CATS of level 4 should be taken in the fourth year. NB: Level 4+ should be interpreted as:- xx4xx, xx5xx, xx9xx
- Certain third and final year options have prerequisites which are not in the compulsory component of the second year. It is the responsibility of each student to be in a position to understand the modules chosen.
- Some optional modules are only offered subject to availability. For example, Economics modules do not run if the numbers are insufficient, so check with the Economics Department. Also, WBS normally restricts module pre-registrations for IB modules to 45 CATS for MMathStat students. Check with Economics Department.
- Students electing to take IB3J2 Decision Making under Uncertainty and/or IB3J3 Mathematical Game Theory: Combinatorial and Search Games are required to register directly with the WBS undergraduate office.
- All 4th Year students have to complete a project (Statistics Masters Dissertation) which includes a short presentation in week 10 Term 1 and a poster session in week 10 Term 2.

- In order to award an integrated Masters degree the Examination Board expects that the candidate has passed the core project module.
- For the Integrated Masters degree, in awarding one of the degree classes (see Section 5.8, outcomes a,b,c,d) the Board of Examiners expects to see marks in that class or higher in at least 48 CATS in Year 4, from whole core and listed modules (i.e. modules listed as Core or List (A) from the fourth year). Note that modules selected from the Optional module list do **not** count as listed modules. In addition, to qualify for an Integrated Masters degree a candidate must pass (at the 40% module pass mark) at least 258 CATS in Years 2-4, including at least 90 CATS in the final year.
- It is a student's responsibility to ensure that the modules they are following are permitted — either because the modules are given explicitly as options by the regulations or because permission has been sought and granted by filling in an unusual option form.
- Any modules not listed (including foreign languages) are classed as *unusual options* and permission to take these modules must be obtained by completing an Unusual Option form, which must be returned to the Student Support Office by the specified deadline. For more information and restrictions on unusual options see Section 4.3.1 Unusual Options. The form is available from the Student Support Office or online:

warwick.ac.uk/fac/sci/statistics/courses/currentstudents/forms.

- Students may take at most one of the following: ST339 Introduction to Mathematical Finance **or** EC333 Topics in Financial Economics: Theories and International Finance **or** IB253 Principles of Finance 1.
- You are not allowed to take both the level 3 and level 4 version of the same module, eg ST323 Multivariate Statistics in Year 3 and then ST412 Multivariate Statistics with Advanced Topics, or ST343 Topics in Data Science in Year 3 and ST419 Advanced Topics in Data Science in Year 4.
- Students may take at most **two** of the following: ST906 Financial Time Series, ST909 Continuous Time Finance for Interest Rate Models, and ST958 Topics in Mathematical Finance.
- Students who have taken ST339 Introduction to Mathematical Finance may not take IB254 Principles of Finance 2. Also, students may not take both EC334 Topics in Financial Economics: Corporate Finance and Markets and IB254 Principles of Finance 2.

2.6.2 Example Pathways

The *Pathways in the MMathStat Degree* web-page illustrates example pathways for a number of different specialisations:

warwick.ac.uk/fac/sci/statistics/courses/handbooks/pathwaytomathstat

Please note these are suggestive only.

2.7 Module Descriptions

Full descriptions of module content, methods of assessment, etc., can be found online by following hyperlinks from the above module lists. Please use the following link in order to access the fully up to date module lists:

warwick.ac.uk/stats/courses/handbooks.

3 Teaching and Learning

3.1 Lectures and Tutorials

The main form of teaching is the traditional lecture course. Lectures are usually very condensed and you are unlikely to understand everything the lecturer does at the time. As a result, most lecture courses in the first two years are supplemented by tutorials, supervisions, seminars or classes (the name varies according to the department concerned). Because the number of students in each group is usually quite small, these tutorials form your main opportunity for asking questions and clearing up difficulties. If you still have questions, you can ask the lecturer directly during their office hours.

For first year students the Mathematics Department arranges supervisions of one hour per week with a research student. These supervisions cover all Mathematics courses. For other courses and departments, the arrangements are usually made by individual lecturers. The lecturing style in Economics is somewhat different from that of other departments. Background reading and the preparation of additional notes which amplify and explain the lectures are usually essential.

Only around 25 percent of your study time is spent in lectures and tutorials. The remaining 75 percent is for independent study. Its impossible to overstate how important this time, that you spend working on your own or with friends, is to developing your understanding of the material. Lecturers usually provide additional material (exercise sheets, extra reading) and working through this is essential. If you leave this work to the end of the year, you will find when revising that you are unable to prepare properly for the exam because you will not have developed the necessary understanding and skills. A loose analogy is that the exams are the equivalent to running a marathon, and if you haven't spent the year training prop-

erly then you will not have developed the fitness that is necessary to do well in the race. There is more advice about study skills in Section 3.9.

3.2 Attendance and Engagement

Our duty as a department is to deliver a coherent degree course with well-presented lectures backed up by support, usually in the form of small classes. Your duty is to try hard to learn, and not to impede the attempts of others. In particular this means that you should attend lectures and support classes, having prepared for them by revising prerequisite material and by attempting all example sheets promptly. A failure to do this usually leads to boredom (through lack of understanding) and an inadequate performance.

Attendance at lectures and tutorials does not contribute formally to the award of a degree, nevertheless it is our expectation that you attend these. We collect records of attendance and work handed in for tutorials which become part of your academic record, even if the work is not for credit towards the assessment of a module. Personal tutors will see these records and will discuss your progress and engagement with the course at their meetings with you.

3.2.1 Attendance Monitoring Scheme

We are required by the University to monitor eleven separate ‘points of engagement’ each year for all undergraduate and post-graduate students in the Department. The student monitoring points are listed online at; warwick.ac.uk/stats/courses/currentstudents/pointsofengagement.

We have deliberately chosen the points of engagement to be activities which it is in your interest to do anyway (seeing personal tutors at the start and the end of each term, attending classes of certain core modules, etc). You should therefore comply with all of these without fail. Should difficulties arise (for example, illness preventing you from attending at a particular time) then you should contact the Student Support Office *and* your personal tutor with an explanation as soon as possible.

International students should be particularly aware of the consequences of not meeting the required points of engagement. The Academic Office is obliged to report to the UK Visas and Immigration department of the Home Office if any student has been found not to be engaging with and attending their degree course. This has serious implications for your visa status.

A record of all monitoring points for all students will be kept by the Student Support Office, who will regularly check to see if any students are missing monitoring points.

If a student misses three monitoring points in an academic year, then the student

will be required to meet with their Personal Tutor. The University Academic Office will also write to all students who miss three monitoring points - the student's Department will be cc'd into this correspondence.

If a student misses any further monitoring points in a year, dependent upon circumstances, the student will be required to meet with the Senior Tutor. If a student misses six monitoring points in a year then the Department reserves the right to invoke the formal University process referring the student to the Continuation of Registration Committee as set out in University Regulation 36 – Governing Student Registration Attendance and Progress; warwick.ac.uk/services/gov/calendar/section2/regulations/reg36registrationattendanceprogress.

3.3 The Personal Tutor System

Every student has a member of staff assigned as their personal tutor. Your tutor is there to help sort out any problems connected with your university career, and you must make a point of seeing them at least twice a term, (usually during the first couple of weeks and last couple of weeks) so that they know how you are getting on. You must respond promptly if they ask to see you and it is important to keep your personal tutor informed of any academic or personal problems that are affecting your performance.

Students can continue to contact their personal tutor via email during a year abroad or an intercalated year. If your personal tutor takes sick or study leave you will be assigned a temporary personal tutor while your original tutor is away from the department.

Some specific ways in which your personal tutor can help are:

- Providing general academic advice on progress and development, including discussing possible option choices and disclosing exam marks and their implications.
- Giving you help and advice about pastoral and non-academic matters insofar as they are able and advising you about where to find further help on the campus if you need it.
- Writing a letter of reference when you apply for jobs or grants (see also Section 8.7).

Personal Tutors should:

- Advertise two 'office hours' each week, starting on the half-hour, when students can consult them.
- Communicate with their students regularly, including via email.

In addition your personal tutor has certain formal duties to represent you in disciplinary matters. For more information about what you can expect from your personal tutor please visit; warwick.ac.uk/seniortutor/informationforstudents

First Year Tutorials: During the first term of the first year students meet with their personal tutors once a fortnight to discuss some mathematics exercises. A short exercise sheet will be made available beforehand with questions based on module ST116 Mathematical Techniques. You must complete the exercises to the best of your ability and hand them in to your tutor, who will give you feedback on your written work. This feedback and the discussions with your tutor will help you make the adjustment to university level mathematics — with the emphasis it places on rigorous arguments and abstract concepts. It is also important for you to get used to tackling exercises in your own time. This is essential for your success at university.

3.4 Changing Tutor or Tutorial Group

Should you wish to change your personal tutor for any reason, please email the Student Support Office (stats.ug.support@warwick.ac.uk) who will arrange a meeting for the Senior Tutor to discuss this with you.

Similarly, if you wish to change tutorial/supervision groups, please discuss this with the Student Support Office.

3.5 The Departmental Senior Tutor

The Departmental Senior Tutor ensures that the personal tutoring system runs smoothly and efficiently within the Department and provides help and advice to the Personal Tutors. At the same time, the Senior Tutor serves as a link between the Department and the Faculty Senior Tutor. The Senior Tutor may also interact directly with students to help in specific matters whose nature require resources and/or support beyond the role of the Personal Tutor (for example, cases of personal issues with the student's Personal Tutor, cases of temporary withdrawals, cases of concerns for lack of attendance, specific cases of mitigating circumstances, and so on).

3.6 Director of Student Experience and Progression

The department's Director of Student Experience and Progression (DSEP) is responsible for working with students to enhance the student experience. The DSEP works closely with the department's SSLC, and will carefully consider any students' views or feedback.

3.7 The Mentor System

The Statistics SSLC administers a mentor system, where older students help first year students settle in to their university life. A mentor provides an informal point of contact to students where they can ask questions about their course, modules and wider university issues such as nights out, accommodation, societies and sports.

The mentor system in no way replaces the Personal Tutor system. Students must meet with their personal tutors at least twice a term and keep their personal tutors informed of any academic or personal problems.

3.8 Personal Transferable Skills

As well as supporting your academic studies, the preparation of assessed work and your active participation in seminars and tutorials will also help you develop skills which will be invaluable in your later career and in job applications and interviews. These ‘personal transferable skills’ include the ability to write clearly and concisely, to explain your work clearly to others and to present your work in a professional manner through the use of word processing and other computer packages.

After completing your degree you will have:

- Acquired basic skills in IT and had the opportunity through the choice of options and other activities to develop these further.
- Acquired independent study and working skills.

3.9 Study Skills

It is important to understand that university education is based on independent study. Lecture courses are very compressed. You will not learn everything from the lectures. You will need to spend time supplementing the lecture material, filling in the gaps, working through examples, and studying textbooks. Each module has an associated CATS weighting which you can use as a guide: a CAT represents 10 hours notional work so a 12 CATS module may contain 30 hours of lectures, 60 hours of independent study and 30 hours of revision.

Here are some specific recommendations to think about:

- Plan to spend 35-40 hours per week on academic work in term-time. However be flexible in order to give more time to any core modules which you are finding difficult.
- Be prepared! Ensure that lecture notes are re-read/understood before the next lecture. Always consult the textbook(s).

- Attempt example sheets as soon as possible — easy questions check/aid comprehension, harder ones deepen it.
- Attempt to understand the direction of a module (read the Aims and Objectives) — try to write a brief narrative or commentary on your notes at the halfway mark and again at the end.
- Praise and reward yourself when you perform well or understand something difficult.
- In accounting for study time, each hour between 10pm and 8am should only count as 30 minutes!

If you feel in any doubt about your study skills you should consult your personal tutor and look out for notices advertising special study skills sessions which are posted on departmental notice boards.

If English is not your first language, it is important to practise at every opportunity. This department encourages the use of English at all times. If you wish to improve your skills, you should visit the English Language Teaching Unit who offer both Pre-sessional and In-sessional courses in English:

warwick.ac.uk/fac/soc/al/study/learn-english

3.10 Feedback to Students

Feedback is an essential part of learning as it identifies gaps in your knowledge and understanding and also provides guidance on how to improve. There are various means by which the department provides feedback but most are linked with coursework.

It is important that you attempt all coursework questions. This will give you immediate feedback on whether you have assimilated the material in the lectures and can apply it to example problems. Keep in mind that mathematics takes time, so if you cannot solve a problem straight away read the lecture notes or a textbook and then try again.

If you are still stuck, talk to some of your fellow students. They might be able to explain material that you have not understood and pick up on misconceptions. Some modules have online forums where you can post questions that will be read by your fellow students (and the module leader). Don't be shy to ask questions. The fact that you have questions shows that you are engaging with the material! Contribute to the process by posting answers on the forum or explaining material to your fellow students. Explaining mathematics will help you develop your communication skills and deepen your understanding!

Make sure to hand in all coursework in a timely fashion. Even if the coursework

is not for credit it is an important tool to obtain feedback and you limit your own learning if you do not submit your work. If you have managed to produce only partial solutions to the problems it is important that you submit these as this will influence how and what material the tutor is going to cover in the tutorial. Once coursework has been returned make sure to read carefully through the comments. If you are in doubt as to what the comments mean please ask the marker who will be happy to explain. If solutions are provided please compare these carefully to your own work. But keep in mind that attempting your own solutions engages you in much deeper learning than simply noting a provided solution.

Participate actively in lectures and support classes like tutorials by providing answers to questions but also by asking questions. This will give the lecturer or tutor a very immediate way to provide feedback to you. To do this effectively it is important that you prepare by revising your lecture notes and attempting the problem sheets.

All lecturers in Statistics have twice weekly office hours and they are happy to see students during these times. Module leaders will be happy to answer questions regarding their modules, although you should make sure you have spent some time on revision so that this can happen effectively. Please make sure to take note of the office hours. They are usually advertised next to the lecturer's office door. Some staff also advertise these on their web pages or state them at the start of the module.

Finally, the personal tutor is available to provide general academic advice. As above, personal tutors offer twice weekly office hours in which they are happy to receive students and provide feedback on their overall academic performance. For assistance on the academic content of individual modules consult with the relevant module leader.

3.11 Warwick Skills Portfolio Award

The Department encourages students to engage with the Warwick Skills Portfolio Award (WSPA) to develop your personal, academic and career management skills, improve your marks, impress potential employers and network with other Warwick students. The WSPA (warwick.ac.uk/services/skills/awards/wspa) is free and available to all undergraduates at Warwick.

The award is achieved by participating in three eligible activities, setting yourself action points related to these, and producing a series of written, reflective entries. At the start of the award you will be allocated a coach, who will comment on your written entries and provide you with on-going support and feedback.

You should aim to complete the WSPA in the academic year in which you start working towards the award. Most people find they can comfortably achieve this,

provided they plan which activities they will take part in and when. You will be able to select your preferred deadline (end of May or end of September) when you complete the ‘Getting Started’ Moodle course.

The Undergraduate Skills Programme Workshops (USP) are a series of skills-specific workshops designed to enable you to develop your personal, academic and career management skills. Each workshop will focus on a specific skill area and help you to enhance your confidence and competence in that area. At the end of the academic year you will receive a certificate of attendance listing each workshop you have attended. For further information see:

warwick.ac.uk/services/skills/events/ugworkshops.

The University of Warwick runs a dedicated development programme for female students to help you take hold of your personal development and realise your ambitions. The bespoke course runs over three and a half days and is free. For more information, applications and dates of courses visit:

warwick.ac.uk/services/skills/personal/sprint.

3.12 The Library

The Library has a designated Academic Support Librarian for each academic department. The Academic Support Librarians are able to provide advice about Library services.

Students can consult the Library website at warwick.ac.uk/library for general information, and their subject web pages for support in starting research in their subject area:

warwick.ac.uk/services/library/subjects/sciences/mathematics-statistics

The Library also manages a number of learning & teaching spaces:

- The Learning Grid: warwick.ac.uk/services/library/using/libspaces/learning_grid
- The Learning Grid Rootes: warwick.ac.uk/gridrootes
- The Learning Grid Leamington: warwick.ac.uk/gridleamington
- The Teaching Grid: warwick.ac.uk/teachinggrid

3.13 IT Services

IT Services provide the essential resources and support necessary to give all members of the University access to information technology for research, teaching, learning and administration purposes. If students have problems using the facilities or systems provided by IT Services, they can go to the Helpdesk located

on the ground floor of the Library building, telephone 024 765 73737 or email helpdesk@warwick.ac.uk.

Every student and member of staff is entitled to register to use the services provided by IT Services, which can be accessed from anywhere on campus. Information on setting up an account, accessing the network from on and off campus, printing and purchasing computers is available on-line at warwick.ac.uk/services/its. IT Services also produce information on acceptable use of University IT facilities for students and staff: warwick.ac.uk/regulation31.

3.14 Communication

The department expects to be able to communicate with you via your University email — and you should check your account regularly (at least once a day). Please check with IT Services to find out more, see Section 3.13. You should also check your pigeonhole and departmental notice board at least once a day. You should let the department know in a timely manner if you are going to be away from the University.

3.15 Student Staff Liaison Committee (SSLC)

The Department of Statistics has a Student Staff Liaison Committee covering its entire undergraduate programme. The committee brings together a group of academic staff with approximately fifteen elected student representatives selected from each year of each degree course. The electoral process is designed to ensure that the views and interests of our diverse student body are fairly represented. The SSLC meets twice a term to discuss a variety of academic issues, student welfare and social activities.

The SSLC is one of the most important places for staff and students to evaluate and comment on the teaching, the resources, the student guidance and support, and the social environment provided to undergraduates by the department. Its key functions include:

- Monitoring and receiving comments on the strengths and weaknesses of modules offered to undergraduates in the Department.
- Contributing to the discussions concerning module and course development.
- Commenting on relevant aspects of department policy developed and discussed by the departmental Teaching Committee. Recent examples include major course revisions, guidelines on timetables for the return of assessed work and the procedures surrounding cheating in assessed work.
- Providing feedback on all Statistics modules (see Section 3.16)

- Looking at the computing, library and other resources and discussing ways of improving student familiarity with and access to these.
- Helping to arrange social events.

The effectiveness of the SSLC depends largely upon the ability of student representatives to reflect the problems and interests of all students, but also upon the willingness of students to approach their representatives. We hope that you will be prepared to identify problems and make suggestions that your representatives can raise at meetings of the SSLC, and that you will want to find out about the committee's discussions and activities (see SSLC notice board).

3.16 Student Feedback

3.16.1 Introduction

Student feedback is important to the department. Lots of feedback is given informally to personal tutors and lecturers (and this is very useful to us), but there is also a formal mechanism for collecting it.

Halfway through, and at the end of the lecture modules taught by Statistics staff, you will be asked to complete a questionnaire (feedback form). This gives you the opportunity to express your view on various aspects of the module. However, feedback is only useful if it is provided in a considered and thoughtful way. These notes have been prepared to answer some of the questions students often ask about the feedback process, and to help ensure that the feedback you give provides a really helpful input to the Statistics Department's teaching. Please take a few minutes to read them.

3.16.2 Why is Feedback Collected?

The Department is constantly looking for ways to improve the learning experience we provide for our students. We can only do this if you let us know your reactions to our modules — not only to identify problems, so that members of staff can take steps to eliminate them, but also to learn about the things you find helpful, so that we can disseminate best practice in teaching and learning throughout the Department and further.

3.16.3 What Constitutes Useful Feedback?

You are accustomed to being on the receiving end of feedback when your work is returned with comments from the marker. If you think about what you do and do not like as feedback on work, you will be in a good position to provide helpful feedback on modules. Here are some points to start you thinking:

Be specific — be constructive: For example, a bare mark on a piece of work is

not very helpful, since it gives no guidance as to what was wrong with it. In the same way, just saying that you did not like a module does not give any indication to the lecturer as to what steps he/she should take to improve the module. Was the pace too slow? Too fast? Did you find it hard to see the relevance of the material? Or is the fact that you didn't enjoy the module perhaps nothing to do with the teaching, but rather means that you made a mistake in an option choice and chose a module which turned out not to fit in with your personal interests? Make good use of opportunities for open-ended comments to explain these points.

Mention the positive as well as the negative: It is always good to know what you got right but discouraging to read comments on work which only mentions what went wrong with it. When a lecturer is doing something well, and you let them know that, then it gives them encouragement to do it again. So when you comment on a module, try to mention any features which you particularly enjoyed or found helpful.

Be honest with yourself: People often talk about 'teaching and learning' to show that the educational process requires participation from two people — the teacher and the student. You cannot expect to get full benefit from a module if you simply attend lectures and do any assessments — you need to do the module reading, participate fully in example classes, etc. So before you indicate that you did not get much out of a module, ask yourself honestly what you put in.

Try to separate personality from content: During your time at Warwick you may be taught by several dozen members of staff. It would be surprising if you liked all of them equally as people, or if there were not some who had habits and mannerisms which irritated you! But try to keep your reaction to lecturers' personalities separate from your reaction to their teaching. It is possible for you to regard someone as extremely irritating but still get a lot out of their teaching.

Be considerate: Lecturers are people with feelings just like students. Sometimes you may need to be critical of aspects of a module, but you should try always to offer criticism in a sensitive way. Comments such as 'X is the worst lecturer I have ever had' are neither useful nor constructive.

Be conscientious: *Please* complete feedback forms for all your modules. If we only get a small number of forms returned, then we may well get a biased idea of students' views — and that idea may not coincide with yours. So don't lose your opportunity to be heard!

3.16.4 What Happens to the Feedback?

1. Questionnaires are distributed by a member of the Student Staff Liaison Committee (SSLC). They collect completed questionnaires and produce a one-page summary.

2. The summary and questionnaires are passed to the Student Support Office who forwards them for comment to the relevant lecturer(s).
3. The lecturer writes a response and returns everything to the Student Support Office who will forward it to the Head of Department.
4. The Head of Department checks the questionnaires and response, noting for wider dissemination particular compliments or suggestions and returns everything to the Student Support Office.
5. The response is copied to the SSLC, and then filed.
6. The SSLC considers the response and passes unresolved items to the Department's Teaching Committee for further action/assessment.

Thus your constructive feedback is seriously considered and is essential to monitoring and improving teaching.

4 Module Registration

4.1 Registration of Modules

We use the University Online Module Registration System (eMR) which is accessed via warwick.ac.uk/evision. First year students will find that their *core* subjects are already registered on eMR, only requiring the addition of any chosen optional modules. Adjustments can be made to this initial list of modules at key times during the academic year. As a student it is your responsibility to ensure that you are registered for the correct modules and assessment methods and that you do this at the correct specified times. Details of registration procedures will generally be sent to you via the department at the appropriate points in the academic year. You must check your pigeonhole, your Warwick email address and the department UG notice boards regularly and follow the instructions provided.

The initial information you supply to eMR does not involve you making a permanent commitment to take the selected modules, nor stop you from following other modules. However, you must ensure that all details held on eMR are correct at the time of the final deadline for registration as these details constitute your final examination timetable. Full details will be circulated at the start of the academic year and at the beginning of each term.

Students should note that eMR may allow you to register for module combinations that may not comply with course regulations. Therefore it is important that you check your module choices against the course regulations: see Section 2 of the handbook. Modules that are not listed in the option lists of your year will require departmental approval as unusual options: see Section 4.3.1.

Module Registration Deadlines: Module registration through the eMR system opens in the first week of the Autumn term for first year students (returning students may access the system during the two weeks prior to the start of the Autumn term), and closes at the end of week three. Further amendments to your module registrations (both additions and deletions) can be made in the first three weeks of the Spring Term. After week 3 of Term 2 module de-registration is possible until the first day of Summer term by requesting such from the Student Support Office.

You must adhere to the deadline for registering for modules, otherwise we may ignore any marks awarded for that module. You must adhere to the deadline for de-registering: absence from any examination for which you are registered means a credit of zero. Students are advised not to leave finalizing the registration until the last day. Further, students should note that it is a university rule that if assessed work or class tests which contribute more than 10% towards the final mark for a module are submitted by the student for credit then it is no longer possible to de-register from the module even if this takes place before the general deadline for de-registration.

Pre-registration of selected modules for the following year: At the beginning of Term 3, both the Economics Department and Warwick Business School (WBS) run online pre-registration for their modules. This encourages you to start planning and choosing your options in advance and also assists these departments with timetabling. Some departments will cap a module if the numbers reach capacity, so pre-registration on popular modules is recommended. As WBS and Economics also run their own registration systems alongside eMR, they request that if you decide to register or de-register from a module at some stage mid-term, you advise them in person as well as changing your registration on eMR.

The WBS deadline for changing registered modules is Week 3, Term 1 for Autumn Term or full year modules, and Week 2, Term 2, for Spring Term modules. Please note that if you register on eMR but not on my.wbs, you will not be considered to have registered for the module.

4.2 Module Codes by Department

ST	Statistics	CS	Computer Science
MA	Mathematics	PX	Physics
IB	Warwick Business School	PH	Philosophy
EC	Economics	LL	Language Centre

4.3 Choice of Optional Modules

There is an enormous range of optional modules. Compulsory modules and some of the optional modules are listed in the body of this handbook. However, in

principle, it is possible to take most modules available anywhere in the University as an unusual option but permission must be sought as described in Section 4.3.1 below.

In considering which options to take, the following points may help:

- Think about where your interests lie and what the module might lead to later.
- Check the prerequisites of modules that you wish to take in the current year. Also, consider which optional modules might be pre-requisites for modules that you wish to take in later years.
- You can try a module and deregister later if you decide not to offer it for examination. However, make sure that you adhere to de-registration rules and deadlines. Talk to your personal tutor and to your friends (especially those who have taken the module before!).
- For students starting in 2013 or later, additional modules taking your load over 120 CATS may have no effect on your overall average mark for the year, although they will still appear on your HEAR transcript. (See Section 5.2 for an explanation of how your average mark is calculated). An extra module is a big commitment and you must be careful not to take on too much.
- It is a student's responsibility to ensure that the modules they are following are permitted either because the modules are given explicitly as options by the regulations or because permission has been sought and granted by filling in an unusual option form.

4.3.1 Unusual Options

An unusual option is a module that is not listed within the option lists of your current year. Before considering unusual options, make sure that you have registered for any optional modules that you might need as prerequisites for modules you wish to take in later years. Also, consider your overall workload.

Unusual options allow you to take modules tailored to your individual interests. Obtaining permission to take an unusual option is relatively straightforward, just follow the instructions given below. To take a module as an unusual option you need to fill in an Unusual Option form which are available from the Student Support Office or online:

warwick.ac.uk/fac/sci/statistics/courses/currentstudents/forms.

After obtaining the agreement (and signatures) of the module leader and your personal tutor submit the form to the Student Support Office who will forward it to the Course Director for approval.

Deadlines:

Forms for Term 1 modules must be submitted to the Student Support Office no later than week 3 of term 1. Students may register for Term 2 and Term 3 modules at the start of Term 2 provided a signed unusual option form is submitted no later than week 3 of Term 2. Failure to submit the forms with the relevant signatures within the time-frame specified above may result in your de-registration from the relevant module.

Restrictions:

In most cases there are no problems in obtaining everyone's agreement however there are some restrictions that you should note:

- Subject to approval by the Course Director, students may take up to 30 CATS of unusual options provided their total CATS load does not exceed the specified maximum load for their respective year.
- First and second year modules may not be taken as unusual options by students in their final years (including the third year of an integrated Master's degree) with the exception of Language Centre modules as permitted under the rule below.
- Language modules with stage 1 learning outcomes may not be taken by students in their final years (including the third year of an integrated Master's degree). While stage 1 "Beginners" level modules are not allowed, "Beginners accelerated" modules are permissible.
- Modules that are listed as core modules in subsequent years may not be taken as unusual options.

The Institute for Advanced Teaching and Learning (IATL) offers a number of interdisciplinary modules which may be taken as unusual options subject to approval. Further information on these modules can be found at:

warwick.ac.uk/fac/cross_fac/iatl/activities/modules

4.4 Foreign Language Modules

4.4.1 General

Students may take modules offered by the Language Centre. All language modules taken for credit must be taken as unusual options and you must follow the procedure described above to register for them. Take particular note of those rules which restrict unusual language options during the final years of the degree (including the third year of an integrated Master's degree).

4.4.2 Language Centre

The Language Centre (warwick.ac.uk/fac/arts/languagecentre), located on the ground floor of the Humanities Building, offers academic modules for exam credit in a variety of languages at a wide range of levels. Most modules can be taken as year-long 24 or 30 CATS modules, a small number of modules are available as 12 or 15 CATS modules running only for one term.

Enrolment for these courses for 2018/19 will take place on the following dates:

- Friday 28 September (Welcome Week) 10am-4pm
- Tuesday 2 October (week 1) 10am-4pm
- Friday 28 September (Welcome Week) 10am-4pm

Further information on enrolment of academic modules can be found here: warwick.ac.uk/fac/arts/languagecentre/enrolmentinformation/academicenrolment

Modules approved by the Course Director as an unusual option are free to undergraduates who register for them formally as part of their degree. Academic modules may also be taken independently from degree study; a separate fee is required for this.

If you are looking for something a little more relaxed, then instead of academic modules you may consider the Lifelong Language Learning programme. Classes are not as intense as academic modules and are taken by students, staff and members of the public. A course fee applies.

5 Examinations and Progression

5.1 Examinations

The Examinations Section of the Academic Office is responsible for organising university examinations. Their webpages warwick.ac.uk/services/academicoffice/examinations contain comprehensive information about examinations.

Personal Tutors are allowed to disclose to their tutees provisional marks (as a percentage) for each exam/assessment taken by that tutee. Please note that such marks are provisional and are subject to ratification/amendment by the Senate of the University and by External Examiners.

All our exams, including solutions and marking scheme, are moderated and checked by both an internal member of staff and an external examiner. Moreover, the Department of Statistics holds scaling meetings at which all STxxx modules are considered in order to take into account any systematic negative impact that might have affected any of its modules.

Students should also be aware that in deciding a degree classification Boards of Examiners will take note of circumstances other than the candidates' overall mark such as, for example, ill health of the candidate and exceptional performance on individual modules. However it is very important that documentary evidence of any mitigating circumstances is communicated to the Student Support Office before the Mitigating Circumstances Panel meets at the end of Term 3 (see Section 5.13).

5.1.1 End of Year Marks

The average mark for a given year is calculated as follows. If you have taken the core modules together with enough options to reach or just exceed the 120 CATS minimum load, but no further optional modules, then it is the average mark for your module marks weighted according to their CATS. If you have taken additional modules beyond the 120 CATS normal load, then the average mark for the year is either the arithmetic (CATS weighted) average of all your module marks, or the arithmetic (CATS weighted) average of some selection of your module marks, whichever is the greater. We select which options to include in the calculation so as to maximise your resulting percentage, but we only consider selections which satisfy the course regulations (in particular, include all the core modules). A detailed example of how this calculation is made can be found on the Statistics website: warwick.ac.uk/stats/courses/currentstudents/algorithm_example

5.1.2 Calculation of Examination Credits: BSc Degree

The first year counts 10%, the second year 30% and the third year 60% towards the final BSc degree mark; i.e. if S_1, S_2, S_3 denote the % credits obtained at the end of years 1, 2 and 3 respectively, then the overall degree % mark is

$$C = (10S_1 + 30S_2 + 60S_3)/100.$$

The credits S_1, S_2, S_3 are calculated as follows:

$$S_k = \max \left(\frac{\sum x_i c_i}{\sum c_i} \right)$$

where x_i is the score on module i with CATS load c_i , and the maximum is taken over all subsets of the modules you have taken in year k that satisfy the regulations for that year.

5.1.3 Calculation of Examination Credits: Integrated Masters Degree

The first year counts 10%, the second year 20%, the third year 30% and the fourth year 40% towards the final Integrated Master's degree mark; i.e. if S_1, S_2, S_3, S_4

denote the % credits obtained at the end of years 1, 2, 3 and 4 respectively, then the overall degree % mark is

$$C = (10S_1 + 20S_2 + 30S_3 + 40S_4)/100.$$

The credits S_1, S_2, S_3, S_4 are calculated as follows:

$$S_k = \max \left(\frac{\sum x_i c_i}{\sum c_i} \right)$$

where x_i is the score on module i with CATS load c_i , and the maximum is taken over all subsets of the modules you have taken in year k that satisfy the regulations for that year.

5.2 First Year Examinations

Most modules are examined in the main term 3 exam period. However you should be aware that there is an examination for ST116 Mathematical Techniques at the end of Term 1, and exams in MA137 Mathematical Analysis and MA138 Sets and Numbers at the beginning of term 2.

The first year Exam Board for the Faculty of Science will consider your results at the end of term 3.

The possible outcomes of the first year examinations are as follows:

- a. Permitted to proceed to the second year of study.
- b. Required to resit.

In order to progress to the second year of the degree programme (outcome a) you must pass (with a module mark of 40 percent or above) the following modules:

- MA106 Linear Algebra
- MA137 Mathematical Analysis
- ST104 Statistical Laboratory
- ST115 Introduction to Probability

You must also pass at least 80 CATS of whole modules including MA137, MA106, ST104 and ST115, and have an average mark for the year of 40 percent or more. Your average mark for the year is calculated in the way described in Section 5.1.

For students allowed to proceed to the second year of study your average mark for the year will be used to determine a classification as follows:

- Class one-First

- Class two (division one)-II.I
- Class two (division two)-II.II
- Class three-Third III

This classification will not form part of your transcript but will give you an idea of how you are progressing.

If you do not meet the above requirements then the Exam Board will require you to resit certain modules in September, as detailed in Section 5.4 below).

There are two possible outcomes of the September resits:

- a. Permitted to proceed to the second year of study.
- b. Required to withdraw.

Your first year counts ten percent towards the total credit for your degree. If you have met the requirements for progression to the second year in June then it is your average mark for the year as calculated above that determines the contribution of the first year to your overall degree mark, which is then used to determine the classification of your final degree. If you are required to do resits in September the average mark carried forward is calculated with the marks for failed modules replaced by a pass mark of 40% for those modules which have been passed on resit.

5.3 First Year Examination Results

The first year Examination Board meets on the last Thursday of term 3 in the morning. After the end of the meeting module marks and corresponding decisions will be released to personal tutors. Once personal tutors have received this information, you will be informed that you can collect your marks from your personal tutor (usually after 2pm on this day).

You are strongly encouraged to meet with your personal tutor in person to discuss your results. If you are unable to meet with your personal tutor on Thursday afternoon you should let your personal tutor know in advance. In these circumstances it is likely that to obtain your module marks you will have to wait until they are available online from the MyWarwick web-pages (warwick.ac.uk/students) from mid July onwards.

Students should note that personal tutors are not usually available during the vacation, nor will they normally give marks out by email or phone. Also, personal tutors will not disclose marks to any third party (e.g. friends or family).

If you are required to resit any modules then you will receive a letter from the Academic Office during the vacation. This will be sent to your permanent home address unless you have completed a vacation address form at the enquiry desk in

the Academic Office. It is your responsibility to ensure that correspondence sent to you during the vacation is sent to the correct address.

5.4 First Year Resits

5.4.1 General

First year students who have failed to meet the required standard in any one of the 4 main modules listed in Section 5.2 will normally be offered the opportunity to resit the final examination before the start of the next academic year. These resits are usually around the first week of September. You will be informed by your personal tutor of any resits you are required to take when you collect your examination results in the last week of the summer term.

University requirements are that all students must return to Warwick University to sit their examinations. The only students who are allowed to choose to sit overseas are those students whose registered home address is in India, in which case they are able to sit in New Delhi only, or those whose registered home address is in China or Hong Kong who will be able to resit examinations in Hong Kong. The Exams Office identifies these students and sends a resit letter offering them the option of taking resit exams abroad.

All students who are required to take resits will be notified by post, so if you have left University before the end of term and your contact details are incorrect *you may not receive a resit letter in time*.

Unless your resit is a *first attempt* (see below) the average mark carried forward is calculated with the marks for failed modules replaced by a pass mark of 40 for those modules which have been passed on resit. You are required to pass the resit examinations before you are allowed to proceed to the next year of your degree. If you fail your resit examinations you will then be *Required to Withdraw*.

Students should note that resit marks are calculated on a resit examination basis ONLY. Coursework marks are **not** taken into account when calculating the resit mark (with the exception of resits for WBS modules).

5.4.2 Resits ‘As a First Attempt’

In certain circumstances (for example, illness on the day of an exam) you may be permitted to resit as a first attempt. (See Section 5.13 below.) In this case your resit will be treated as the first instance of your sitting that exam, and it is that mark that you will carry forward.

5.5 Second Year Examinations

Most second year modules are examined in the main term 3 exam period. The University webpage contains general information on examinations:

warwick.ac.uk/services/academicoffice/examinations/

In order to progress to the third year students must pass (at the 40% module pass mark) at least 60 CATS.

To qualify for a BSc Honours degree a candidate must pass (at the 40% module pass mark) in the final two years contributing to the degree classification, whole modules equating to at least 168 credits in total, including at least 80 credits taken in the final year. To qualify for an Integrated Masters Honours degree a candidate must pass (at the 40% level) at least 258 CATS in Years 2-4 including at least 90 CATS in the final year. For more on this see:

warwick.ac.uk/services/academicoffice/quality/categories/examinations/conventions/-ug13

For any second year student (whether on Honours or Pass) the possible outcomes of the second year examinations are as follows:

- a. Class one - First I
- b. Class two (division one) - II.I
- c. Class two (division two) - II.II
- d. Class three - Third III
- e. Permitted to proceed to the final year of an Honours course.
- f. Fail.

In order to proceed to the third and fourth years a Masters student needs to obtain a class one or a class two (division one) result. Note that in order for a student's second year results to be classified as 2.1, they must normally have an overall mean of at least 60.0%, and the classification decision may also take account of the marks obtained in individual examinations. Masters students who find themselves in groups (c) to (e) will therefore progress to the third year of the BSc Mathematics and Statistics course.

Students in group (e) have failed to obtain an overall Honours classification but have been permitted by the examiners to continue with an Honours course.

Students in group (f) have the right to resit the second year examinations the following June without residence at the University. A student who remains in group (f) following these resits will be required to withdraw. Special papers are not usually set, but examiners give exam scripts by resit students special consideration.

5.6 Second Year Examination Results

It is your responsibility to ensure that you understand what actions are required from you when your results become available. So please talk to your personal tutor if the following instructions are not clear enough to you.

The Exam Board for second year students does not take place until the week after the end of the summer term so second year students cannot obtain their results from their personal tutors. However module marks will be made available to students for all years online via the MyWarwick pages (warwick.ac.uk/students) from mid-July and second year students are advised to check their results on these pages. Alternatively, they may collect their marks from their personal tutor at the beginning of the next term in October.

As the second year results are not released until after the end of term, the outcome of the second year Examination Board (as described in Section 5.5) will also be made available on a secured webpage you can access using your Warwick login.

Within two weeks of the second-year exam board, the Department will also send letters to those students who are permitted to proceed to the third year of the integrated master's degree. Letters will be sent to all students who are permitted whether they are registered for the integrated master's degree or not. If you are registered for an integrated master's degree but were not given permission to proceed you will also be sent a letter.

Second year students who are required to resit or withdraw, or whose degree status is otherwise changed will be sent a letter which provides the contact details of a senior member of the department who will be able to give additional guidance.

All letters (in particular, *letters informing you of any resits you may be required to take*) during the vacation will be sent to your permanent home address unless a *vacation address* form is completed at the Enquiry Desk in the Academic Office. It is your responsibility to make sure that any correspondence sent to you during the vacation is directed to the correct address.

You should be aware that staff dealing with examination results may not always be present at University in the vacations. You should not expect to be able to contact your Personal Tutor in the vacations, nor that requests or enquiries will be responded to within a matter of days, as might be expected in term-time.

5.7 Third and Fourth Year Examinations

University examinations are mostly held in Term 3 in all three years. The University webpage contains general information on examinations:

warwick.ac.uk/services/academicoffice/examinations

Students should be aware that in deciding a degree classification Boards of Examiners will take note of circumstances other than the candidates' overall mark such as, for example, ill health of the candidate and exceptional performance on individual courses.

Students should note that in awarding one of the BSc degree classes (see Section 5.8, outcomes a,b,c,d) the Board of Examiners expects to see marks in that class or higher in at least 48 CATS from whole core and listed modules (i.e., modules appearing in List (A) or List (B) of the regulations for the BSc MathStat) taken in the final year equating to at least 48 CATS points in total.

For the Integrated Masters degree, in awarding one of the degree classes (see Section 5.8, outcomes a,b,c,d) the Board of Examiners expects to see marks in that class or higher in at least 48 CATS in Year 4, from whole core and listed modules (i.e. modules listed as Core Modules or List (A) in Year 4. Note that modules selected from the Optional module list do **not** count as listed modules.

To qualify for a BSc Honours degree, a candidate must pass (at the 40% module pass mark) in the final two years contributing to the degree classification, whole modules equating to at least 168 credits in total, including at least 80 credits taken in the final year. To qualify for an Integrated Masters Honours degree a candidate must pass (at the 40% module pass mark) at least 258 credits in years 2-4 including at least 90 CATS in the final year. For a Pass degree a candidate must pass (at the 40% module pass mark) in the final two years contributing to the degree classification, whole modules equating to at least 150 credits taken in the final two years and 50 credits taken in the final year. For more on this see:

warwick.ac.uk/services/academicoffice/quality/categories/examinations/conventions/ug13

5.8 Final Year Outcomes

For any final year student (whether on Honours or Pass) there are 6 possible outcomes of the final examinations. These outcomes are based on the weighted average C of the final years' percentage together with the percentage(s) of previous years (see Section 5.1.2).

The outcomes are:

- a. Class one - First I
- b. Class two (division one) - II.I
- c. Class two (division two) - II.II
- d. Class three - Third III
- e. Pass.

f. Fail.

The decision on the outcome is based not only on the value of C but also on marks obtained in individual examinations - see Section 5.7 above.

Students in group (f) have the right to resit the final year examinations the following June without residence at the University. Special papers are occasionally set and examiners treat resit students as special cases.

A third year Pass student who achieves a credit C that is greater than 40% (based on the normal loads in year 2 and 3) and satisfies the rules of Section 5.7 is awarded BSc Honours in the appropriate class.

5.9 Third and Fourth Year Examination Results

It is your responsibility to ensure that you understand what actions are required from you when your results become available. Please talk to your personal tutor if the following instructions are not clear enough to you.

Examination results for third and fourth year students are released after the relevant Board of Examiners has finished meeting in week 10 of the summer term. Students in these years can obtain their results from their personal tutors on Thursday afternoon of Week 10. You are strongly encouraged to meet with your personal tutor in person to discuss your results. You should make suitable arrangements with your tutor *in good time, before the last week of the summer term* to collect your marks. You cannot assume that your personal tutor will be available after the end of term.

All letters (in particular, *letters informing you of any resits you may be required to take*) during the vacation will be sent to your permanent home address unless a *vacation address* form is completed at the Enquiry Desk in the Academic Office. It is your responsibility to make sure that any correspondence sent to you during the vacation is directed to the correct address.

You should be aware that staff dealing with examination results may not always be present at University in the vacations. You should not expect to be able to contact your Personal Tutor in the vacations, nor that requests or enquiries will be responded to within a matter of days, as might be expected in term-time.

5.10 Exit Qualifications

Occasionally some students may find themselves in the position where they are either unable to continue with their studies, or where it has not been possible for the University to award them with the qualification for which they were registered. This can include the below scenarios:

- Students who have not met academic progression requirements having exhausted all available opportunities to remedy academic failure via resits
- Students who withdraw due to personal or medical reasons
- Students who are restarting on another degree programme

For students who find themselves in this position, the University has developed Exit Qualifications in order to recognise their achievements to date. Boards of Examiners may recommend the award of either a Certificate of Higher Education (CertHE) or a Diploma of Higher Education (DipHE).

A full breakdown of the total minimum credit to be taken and passed by students in order for Boards of Examiners to be able to recommend each qualification can be found on the following webpage; warwick.ac.uk/services/aro/dar/quality/az/-exitawards

5.11 Student Academic Appeals Procedure

Under certain defined circumstances and as per the University Calendar (University Regulations) students may appeal against decisions relating to their academic progress or outcomes. These may be summarised broadly as follows:

- Final-year undergraduate students may appeal against the award of a particular degree class or if they have not been awarded a qualification. For an appeal to have any chance of success it should be based on relevant evidence which was not available to the Board of Examiners when its decision was reached. Further the reason why the evidence was not available at the time the Board met should be provided.
- First-year and intermediate-year undergraduate students have the right to appeal only against a decision that they be required to withdraw from their course of study, and then only if they are in possession of relevant evidence which was not available to the Board of Examiners when its decision was reached.

Further information and details of the process can be found in the University Calendar (see Regulation 42) or at warwick.ac.uk/services/academicoffice/-examinations/students/appeals

5.12 Departmental Assessment Strategy

The Department of Statistics has a Departmental Assessment Strategy, which can be viewed at: warwick.ac.uk/stats/courses/assessmentstrategy

Assessment is a mixture of formal examinations and assessed coursework. The assessment arrangements for STxxx coded modules can be found in the Assess-

ment Handbook: warwick.ac.uk/stats/courses/assessment_table_1819.pdf

5.13 Mitigating Circumstances

Mitigating or extenuating circumstances are those events which have had a detrimental effect on your study, to the point that it is in your interest to draw your department's attention to them and ask for them to be considered in mitigation of poor performance. Such circumstances include (but are not limited to) illness, both bodily and emotional; the severe illness or death of a close family member; a shocking or traumatic personal experience. In addition, sudden, unexpected changes in family circumstances might affect your ability to make academic progress as a consequence of their demonstrable emotional impact upon you, and may also be considered as mitigation.

Extenuating circumstances can broadly be classified into three types:

- Mitigating circumstances impacting upon your performance in examinations.
- Long-term chronic conditions, dealt with by Reasonable Adjustment, see Section 7.5.
- Short-term illnesses or occurrences affecting your ability to submit coursework on time, for which the appropriate action is to apply for an extension, see Section 5.15.

Long term chronic conditions (normally greater than a term in duration and that are likely to continue) and disabilities are dealt with using reasonable adjustment, see Section 7.5. However, a significant deterioration of a permanent or chronic condition already reported and covered by reasonable adjustments, is classed as a mitigating circumstance and/or a justification for an extension request.

This section of the handbook is concerned with circumstances affecting your performance in examinations or parts of examinations.

In the event of a short-term illness or occurrence impacting your ability to submit a piece of assessed work on time, you should not submit a mitigating circumstances form and instead should seek for an extension as described in Section 5.15.

If you have mitigating circumstances that have impacted modules from outside of the Department of Statistics, it is your responsibility to ensure that you inform the department who delivered that module of the mitigating circumstances in good time, and within the relevant guidelines and deadlines for that department.

The official University guidelines covering mitigating circumstances, including the procedure for submitting a Mitigating Circumstances Declaration form, can be found on the following web-page:

warwick.ac.uk/services/academicoffice/examinations/students/mitigatingcircumstances

The Mitigating Circumstances Declaration form can be found on the following webpage:

warwick.ac.uk/stats/courses/currentstudents/forms/

The University is aware that in some cultures it is considered shameful or embarrassing to disclose the details of these kinds of circumstances to those outside one's family. This is not the case in the prevailing UK culture and you should be aware that your Department and the University are fully supportive of students in difficult circumstances and want to assist if at all possible. If you feel inhibited from talking to a tutor or other member of staff in the first instance, you may also consider talking to a member of your SSLC, the Students' Union, or a counsellor for initial, informal advice.

Mitigating circumstances which may have affected your performance in an examination or any part of an examination and associated evidence are reviewed by the departmental Mitigating Circumstances Panel which makes a recommendation to the Board of Examiners.

The final year Mitigating Circumstances Panel includes the departmental Senior Tutor, the Director of Undergraduate Studies, the Exam Secretary of your year group and the Head or Deputy Head (Teaching and Learning) of the Department. The Mitigating Circumstances Panel for first and second years includes a subgroup of the above.

In order for your circumstances to be considered as mitigating, they must be conveyed formally via the submission of a Mitigating Circumstances Declaration Form which must be submitted to the Student Support Office, where it is handled by the Mitigating Circumstances Officer.

Your claim for mitigating circumstances must be accompanied by independent evidence which must confirm the existence of the mitigating circumstances and state how these have impacted on your ability to study and/or complete assessments. The evidence must be in English; evidence in another language must be accompanied by a certified translation.

Deadlines: You should aim to notify the Student Support Office of mitigating circumstances arising during an exam within 24 hours of the exam in question. A mitigating circumstance form and supporting evidence should be submitted no later than 3 working days following the last day of your University examination. All other cases of mitigating circumstances should be submitted no later than Monday, week 9 of term 3.

Note that it is your responsibility to ensure that mitigating circumstances are communicated as described above.

When requesting medical evidence to support your application for mitigation you

are advised to make clear to your doctor that the information will be shared with a number of people and to discuss with your doctor the most appropriate wording of the medical evidence. You might find it helpful to share this advice with your doctor. If your submission contains sensitive personal information and/or highly confidential evidence, you may submit your mitigating circumstances marked “strictly confidential and for the attention of the Chair of the Mitigating Circumstances Panel only.”

Note that the University expects that you will disclose your circumstances before the Mitigating Circumstances Panel meet, so that they may be taken into account in good time. You should be aware that, in the event you feel you need to appeal the outcome of an Exam Board, offering extenuating or mitigating circumstances at that point will need to be accompanied by a good reason why you withheld, or were unable to provide, the information earlier. Without wanting to invade your privacy, the University does expect that you bring such circumstances to your Department’s attention in a timely manner, despite the discomfort you might feel in so doing. Failure to disclose such circumstances at a time when you could have done so may subsequently be problematic. Your Department will do all it can to support you in difficult situations.

5.14 Special Examination Arrangements

See Section [7.5](#).

5.15 Assessed Work

Assessed work means credit obtained by a means other than a conventional university-supervised examination.

5.15.1 Deadlines

Assessed work usually comes with a deadline for completion. The department and SSLC consider these essential to ensure fairness to all the students doing the work and to the markers. Deadlines are enforced by penalising late work. Different departments have different conventions, and normally the rules of the Department teaching the module apply.

In the Department of Statistics the lecturer giving the assessment will name a date as the deadline (this will not usually be a Friday). Work should be submitted by posting it into the appropriate postbox at the Student Support Office on or before the deadline dates and time when the postbox will be emptied. The normal deadline is 11am.

Pieces of work with a credit value of more than 2 CATS:

A student who misses the deadline must personally hand their work to the Student Support Officer who will record the date and time when it was received. The lecturer will automatically enforce a penalty of 5 marks per day. "Marks" mean marks on a percentage scale. A late piece of work that would have scored 65% had it been handed in on time would be awarded 60 if it were one day late, 55 if two days late, etc. Penalties accrue only on working days (not weekends or public holidays).

Pieces of work with a credit value of less than or equal to 2 CATS:

Such work will receive a mark of 0% if submitted late. Weekly or fortnightly coursework normally fall under this category.

Normally, feedback will still be offered on work which is submitted late, provided it is submitted within 20 days of the original deadline and before the next assignment on the module is due. These restrictions may be waived if there was mitigation.

5.15.2 Requests for Extensions or Waiving a Late Penalty

The following information is relevant only for Statistics (STxxx) modules except for ST906, ST909 and ST958:

- Students registered in the Department of Statistics taking "ST" coded modules should follow the below guidance.
- The exception is modules intended for students on the MSc in Financial Mathematics. Deadline extensions for ST906, ST909 and ST958 are handled by the Finance Masters Programme Team (finmasters@wbs.ac.uk).
- Students of the Department of Statistics taking modules from outside of the Department of Statistics should consult the Department delivering those modules regarding their procedures for granting extensions for assessed work. Students should also submit mitigating circumstances to the Department of Statistics Student Support Office in relation to the circumstances impacting these modules, to be considered by the Mitigating Circumstances Panel.
- Students not registered in the Department of Statistics taking "ST" coded modules should follow the below guidance. These students should also inform their home department of any mitigating circumstances and subsequent extensions or waivers that are approved in relation to "ST" coded modules.
- Students must submit an extension request form for requests for extensions for STxxx coded modules to be considered. This form is available online at warwick.ac.uk/fac/sci/statistics/courses/currentstudents/forms or from the Department of Statistics Student Support Office.

Requests for extensions to a published deadline, or waiving a late penalty, will be granted only in cases where a student with appropriate medical or compassionate grounds makes the request before the deadline has passed unless there are specific circumstances which warrant an extension of this period.

Any such requests should be supported by documentation of the extenuating circumstances. These should be presented to the Student Support Office.

Late submission penalties will not be waived for bad time management, so plan ahead and make allowances for the possibilities of unforeseen demands on your time, such as job interviews and submission deadlines that may be close together. If you write your work on your computer make sure you regularly save your files. No excuses will be accepted due to problems you may suddenly have with your computer or printer.

The Department may require students to sit an examination in lieu of submitting a piece of assessed coursework.

In exceptional circumstances and subject to submission of appropriate documentation, the Department reserves the right to waive a piece of assessed coursework which is worth less than or equal to 3 CATS entirely. This would only be considered in cases where the specific circumstances of the student or the nature of the coursework would not allow them to submit an assignment with an approved extended deadline. In such cases the module mark would be calculated with the waived coursework mark being weighted at 0.

5.15.3 Self-Certification

For assessment contributing 10% or less of the module credit, a student may submit a request for extension based on self-certification. Self-certification is permitted only for a minor illness that is short-lived (not lasting more than seven days). Students are asked to submit a self-certification form within 3 working days of their return to University. Forms are available from the Student Support Office, or from the following link:

warwick.ac.uk/fac/sci/statistics/courses/currentstudents/forms

Students are not permitted to self-certify on more than two occasions during an academic year.

5.15.4 Cheating (Including Plagiarism)

What constitutes cheating?

In the university regulations cheating is defined as an attempt to benefit oneself or another by deceit or fraud. This includes reproducing one's own work or the work of another person or persons without proper acknowledgement. The department

recognises that discussing ideas about how to tackle questions is a valuable part of the learning process. *For assessments that are not explicitly group work you are required to work independently of other students. While collaboration in the sense of a discussion of general strategies or help of a general nature are allowed, detailed discussions and comparison of numerical results or computer code are not permitted. The work you submit should be written in your own words and you should not ask to see written work, computer code or computer output belonging to another student. If you hand work in claiming that it is your individual work and it is not this will be treated as cheating.* Work produced by someone else may be included only provided it is appropriately acknowledged. Unacknowledged copying from either another student or from published sources including the internet is also treated as cheating. The purchasing of essays constitutes cheating under Regulation 11 and is subject to the same penalties.

Cheating also covers more obvious sins such as copying in tests, sharing calculators in tests and examinations, stealing work from other students, or taking your mobile phone into an examination. You are also guilty of cheating if you assist another student to do so, for example by allowing them to copy your work.

- Cheating is unacceptable and often easily spotted. Lecturers have been instructed to report any cases of suspected cheating or plagiarism which are dealt with as described below.
- We keep records! Personal Tutors may be required to write references to prospective employers testifying to honesty and integrity, if your file records that you are guilty of the offence of cheating, then this could lead to serious difficulties for you.
- If the matter goes to an Investigating Committee (and second offences will!) then you could end up thrown out of the university.
- Cheating could also constitute a breach of University Regulation 23 governing Student Disciplinary Offences.
- Cheating by students from the Statistics department in modules taught by other departments will be dealt with within that other department and reported back to the Statistics Exam Board. It works the other way round too as the Statistics Department will deal with all cases of suspected cheating in Statistics modules and report the outcome to a student's home department.
- The University understands that students may wish to have their work proof-read (particularly if English is not a student's first language). The University regulations do allow for this, provided the University's policy on proof-reading is followed (see <https://www2.warwick.ac.uk/fac/sci/statistics/courses/currentstudents/proofreading>).

The library offers an online Moodle course entitled Referencing and Avoiding Plagiarism Skills Tutorial. The department recommends that students self-enrol for this course before commencing coursework or a dissertation that involves using literature.

Where the format and style of the assessment allows, the department may use source matching software packages as part of the submission process for assessed work. We advise students not to use source matching software packages at other institutions or source matching software available online. Source matching software often automatically adds all new material to its database so this practice may lead to your work being investigated for plagiarism.

Formal procedures followed in cases of suspected cheating in coursework:

The University sets out the formal procedures in Regulation 11 of the University Calendar (see warwick.ac.uk/services/gov/calendar/section2/regulations/cheating). These are briefly described in the following paragraphs.

- Instances of suspected cheating will be referred to a departmental Academic Conduct Panel (ACP), which will consist of at least two academic members of staff. The ACP assembled for a given case will not include the leader of the module the work was produced for.
- If the ACP considers there is evidence of poor academic practice, or that cheating has occurred, the Panel will ask the student to make a statement.
- Should the ACP conclude there is evidence of cheating, they will refer the case to the Head of Department, who will give the student the chance to make representations on their own behalf, before deciding what penalty if any shall be applied. In the absence of mitigating circumstances, this shall normally be a mark of zero in the piece of work concerned.
- The student may accept the penalty determined by the Head of Department as a final decision. A report of the circumstances of the case and the penalty imposed will be reported in the student's file and to the relevant Examination Board.
- The student has the right to appeal to an Investigating Committee of the Senate (ICS) against the decision – more details can be found in Regulation 11 of the University Calendar (updated in 2017).
- The Head of Department may alternatively decide the suspected offence is sufficiently serious as to require referring to an ICS – this includes instances of suspected cheating by students who have previously been found to have cheated.

5.15.5 Marks and Marking

The marks given for assessed work are always provisional and may be changed by the Board of Examiners. Students should retain all of their assessed work because it may have to be resubmitted to the department just before the Board of Examiners meeting.

Students may choose to have their major projects and essays marked anonymously, just quoting their University number. However, anonymous marking leads to difficulties in quickly returning marked work. Such work cannot be returned via students' pigeonholes and there are further problems when numbers are incorrectly quoted. Consequently, following SSLC and Science Sub-Faculty discussions, students must quote their names on all individual Statistics, Mathematics and other Science Faculty assessments which account for less than 30% of that particular module's credit.

5.16 Use of Calculators in Examinations

Concerning the use of calculators in examinations the Department of Statistics follows the University rule which states that *except for the display of error or function messages, calculators with non-numeric displays are not allowed*. In other words prohibited calculators are those which can accept alphabetical data. Note that this includes most graphical calculators of the type acceptable in GCSE and A-level examinations. It is your responsibility to ensure that your calculator fulfils the University's criterion and that your calculator is not of the prohibited type. Otherwise you may find yourself denied the use of your calculator and be involved in disciplinary proceedings.

Suggested suitable calculators for incoming students which are in line with recommendations from the Computer Science Department are Casio fx82, fx83 or fx85. All of these are available from SU and from well known retailers. They are also reasonably priced.

Please remember:

- Calculators must not be passed from candidate to candidate during the examination;
- Responsibility for the calculator's proper functioning is entirely that of the student;
- Students taking examinations other than those of the Department of Statistics must ascertain the regulations governing the use of calculators from the Department concerned.

In particular, calculators are not allowed in ST115 or examinations organised by the Mathematics Department (these are all MAxxx module exams). In general,

the same rule applies to tests for credit in MAxxx modules, unless students are otherwise informed by the lecturer running the test.

5.17 Student Prizes

Prizes will be awarded for outstanding/excellent performances in each year of our degree courses. For continuing students, these will be presented in the induction session at the start of the next academic year. For graduating students, these will be presented in a reception in the Department on the day of graduation. Third year integrated Masters students going into the fourth year are also eligible for Warwick Statistics Senior Scholarships: <https://www2.warwick.ac.uk/fac/sci/statistics/courses/senior-scholarships/>

6 Change of Course

6.1 Transferring to Another Degree

It is possible, with the permission of the relevant department, to transfer from the first year of Mathematics and Statistics to closely related degree schemes such as, MORSE, Mathematics and Economics, and so on. In every case it is necessary to fill in and sign a course transfer form, which is available from the Student Support Office or online: warwick.ac.uk/fac/sci/statistics/courses/currentstudents/forms. Course transfers are only permitted during term 1, the first week of term 2 and at the end of the academic year when examination results are known.

Transfers from MathStat to the integrated Masters or vice versa can take place at any time during the first two years. However where Student Finance England (SFE) or Local Authority (LA) funding for the fourth year is a consideration, it is advisable to make this decision earlier rather than later. For advice on fee implications please consult with Student Finance: warwick.ac.uk/services/academicoffice/finance.

During the third year of study, we will not permit any changes between degrees after the end of the first term. Transfer from MathStat to MMathStat at the start of the third year is subject to satisfactory performance in the second year.

Important note for international students: Overseas students should check visa implications with Warwick Immigration Services before requesting a course transfer. Depending on the nature of the degree change, different processes need to be followed and deadlines apply. In some cases (such as changing from a four-year course to a three-year course) it may be necessary to return to the home country and apply for a new visa from there. For more details and updates see:

warwick.ac.uk/study/international/immigration/tier4/changes/coursechange

and contact the immigrations service for remaining open questions:

warwick.ac.uk/study/international/immigration

6.2 Integrated Masters Students Electing to take a BSc

This section applies to students registered on the Integrated Master's degree from year 3 onwards who wish to graduate early with a BSc.

Before electing to graduate with a BSc, students should consult with Student Finance regarding the financial implications. Furthermore, overseas students are asked to consult beforehand with Immigration Services warwick.ac.uk/study/international/immigration.

Students in year 3 may request transfer to the BSc degree up until the end of week 10 of term 1 via a course transfer form available online at warwick.ac.uk/fac/sci/statistics/courses/currentstudents/forms or from the Student Support Office. Once the transfer is complete, students will need to change their module registration to satisfy the course regulations for year 3 of the BSc degree.

After week 10 of term 1, students in year 3 may request to graduate with a BSc degree at the end of year 3. A course transfer form should be submitted by the end of week 8 of term 3 requesting a transfer to take effect at the end of the academic year. Such students are expected to continue to follow module registrations that comply with the course regulations of year 3 of the integrated Masters degree which are deemed to satisfy the course regulations for the BSc.

Students in year 4 of the integrated Masters wishing to graduate early with a BSc should make a request via e-mail to the Student Support Office and submit a permanent withdrawal form by 31st of January of the 4th year. Requests to graduate early received after this date would only be considered in exceptional circumstances. Further information on permanent withdrawals and the relevant form are available at warwick.ac.uk/services/academicoffice/studentrecords/pwd.

For the award of the classification for a BSc degree the exam board considers marks in core and listed modules taken in the third year, see Section 5.8. For students who requested to be considered for the award of a BSc but are still registered on the integrated Master's degree in term 2 of year 3, these are the core and listed modules (that is modules appearing as core modules in List (A) or in List (B)) in year 3 of the integrated Master's degree. Furthermore, the degree classification will be calculated using the weightings across years as specified in the BSc degree.

Note that decisions taken to graduate with a BSc after module registrations have been made in the 4th year may result in the student HEAR (Higher Education Achievement Report) transcript including the modules which were due to be taken

in the 4th year with a mark of zero. Where there are modules on the integrated Masters only (including 3rd year modules) which are associated with actuarial exemptions, students who elected to leave without completing the 4th year of the programme would not be eligible for these exemptions. This means that a student who takes a module in their third year that is listed on its webpage as “only available to those on four year degrees”, who then graduates with a degree which is NOT an integrated Master’s degree, will no longer gain the actuarial exemptions the module would have otherwise granted them. This is true even if the student is allowed to remain registered on the module in question.

6.3 Intercalated Year

Detailed information about intercalated years can be found in the Intercalated Year Handbook which is available online at warwick.ac.uk/fac/sci/statistics/courses/-handbooks

Statistics students may apply to take a degree course entitled Mathematics and Statistics (with Intercalated Year), GG17, which entails four years of study rather than the usual three. Registration for this degree should take place as early as possible in the previous year. For Mathematics and Statistics students the intercalated year takes place at the end of the second year. On their return, students join the final year of study. The intercalated year entails either working in industry, or studying at a university abroad and must be approved by your Personal Tutor, the Intercalated Year Coordinator and the Director of Undergraduate Studies. Approval is not guaranteed and largely depends on current academic achievement (no less than 2:1). An Intercalated Year Approval form will have to be completed. The forms are available online at warwick.ac.uk/fac/sci/statistics/courses/currentstudents/forms. During the intercalated year you must meet the relevant monitoring points (warwick.ac.uk/fac/sci/statistics/courses/currentstudents/pointsofengagement) which require you to contact the Intercalated Year Coordinator on a regular basis with a brief summary of your experience, and also inform the Intercalated Year Coordinator as soon as possible if any difficulties arise. Please also be aware that, as this intercalated year forms part of your formal degree programme, half ‘home’ student fees are payable. For further information about this contact Student Finance in University House.

Undergraduates who have in the past succeeded in finding a job in industry have found this a very helpful experience. The Department does not currently provide a formal role in helping students find an industrial placement, and students who are interested in this are recommended to seek help from the Careers Office. The main criterion is that the placement should provide learning experiences which are related to the degree course. After your return from the intercalated year, you will be required to file a report with the Department during the first week of the

first term on this learning experience.

ERASMUS, a European Union educational scheme, provides an opportunity for Warwick students to spend a year at a partner university in another European country. If you are interested in the ERASMUS scheme, you will get advice and help from the International Office in University House, see warwick.ac.uk/study/studyabroad.

7 Welfare

The University has a strong and well-established network of welfare and support services provided for students and, in many cases, staff. The services set out below, which are provided across the campus, are diverse and intended to meet the many and varied needs of the University community. Please refer to the following web-page for further details:

warwick.ac.uk/services/supportservices

7.1 Illness

Illness can be a mitigating circumstance and so you should follow the advice and procedures laid out in Section 5.13 and Section 5.15. Ensure you let your personal tutor and lecturers expecting assessments know.

If your illness affects your attendance to the extent that you miss a monitoring point (please refer to warwick.ac.uk/stats/courses/currentstudents/pointsofengagement for the list of current engagement points) please contact the Student Support Office in the first instance so that we can correctly record the reasons for absence.

7.2 Dean of Students and Wellbeing Services

The Dean of Student's Office (warwick.ac.uk/services/tutors) and Wellbeing Support Services (warwick.ac.uk/services/supportservices) provide help and advice to students from all departments. The University has a Counselling Service (warwick.ac.uk/services/counselling) which provides individual counselling, email counselling and group sessions. These services are entirely confidential and nothing is passed to any third party (e.g. your department) without your permission. Counselling Services also offer a range of specialist workshops on topics ranging from study skills to stress reduction. A list of the workshops offered by the Counselling Service can be found at warwick.ac.uk/services/tutors/counselling/workshops.

7.3 Equal Opportunities

The department subscribes to the University's Equal Opportunities Statement:

The promotion of Equality, Diversity and Inclusion concerns all of us and is the responsibility of all members of our community. It is expected that we will all contribute to ensuring that the University of Warwick continues to be a safe, welcoming and productive environment, where there is equality of opportunity, fostered in an environment of mutual respect and dignity.

The concept of diversity encompasses acceptance and respect. It means understanding that each individual is unique, and recognising our individual differences. We understand that simply having diversity in our work force and student body is not enough; we must create an inclusive environment where all people can contribute and reach their full potential.

Inclusion is engaging the uniqueness and talents, beliefs, backgrounds, capabilities and ways of working of all individuals, joined in a common endeavour, to create a culture of belonging, in which people feel valued and respected.

Further information regarding Equality, Diversity and Inclusion can be found at the following links:

warwick.ac.uk/equalops

including the Diversity and Inclusion Policy

warwick.ac.uk/equalops/equal_opportunities_statement/diversityandinclusion

Also note that the department has a Disability Representative who liaises with Disability Services and who welcomes feedback from students with disabilities.

7.4 Sexual and Racial Harassment

Sexual and racial harassment are totally unacceptable: we will support those subjected to it and, when appropriate, will take disciplinary action against offenders. Within the department help and support will be provided by all members of staff. Outside the department you may seek help from the Faculty Senior Tutor, the Student Counsellors and the Student Union Welfare Staff.

The University and the Students' Union have prepared Guidelines on Sexual, Racial and Personal Harassment:

warwick.ac.uk/services/equalops/dignityatwarwick

The guidelines include advice on identifying and addressing harassment, formal procedures which can be followed and details of sources of support. The guidelines are also available from the office of the Director of Student and Ancillary Services.

If you feel able to make it clear to the person causing you offence that their behaviour is unacceptable that may be enough to stop it. But if you do not feel able to tackle the person, you should feel free to seek assistance from those listed above.

7.5 Reasonable Adjustment and Special Examination Arrangements

If you have an existing or ongoing disability, illness or medical condition, which requires special arrangements for your final exams, class tests and/or any other assessed work please discuss this with your Personal Tutor and the University Disability Services (warwick.ac.uk/services/disability) as soon as possible. Students should register with Disability Services and meet with an advisor to discuss what special arrangements may be helpful to enable you to engage with your course. Adjustments are considered on an individual basis and are considered in the context of the impact of the disability or learning difference, University policies and the Equality Act 2010. Once agreed, any recommended adjustment will be confidentially communicated to your Department by Disability Services.

Regarding class tests and other assessed work, special arrangements need to be discussed and agreed with the relevant department for each module for which you require special arrangements. In addition to the contacts above, please notify the Student Support Office (both at the Department of Statistics and the Department which offers the corresponding module). It is not required for you to notify module leaders if you do not feel comfortable doing so, but we recommend notifying them, as it will give more time for them to consider how best to accommodate your specific requirements.

Please let the Student Support Office know about special arrangements at least 10 working days before the class test takes place or the assessment is due. If possible let us know earlier to allow us to best support you. Insufficient notice to the corresponding departments may mean that it is not possible to make appropriate arrangements (subject to eligibility) in time for the class test or assessment.

Regarding final exams, if appropriate, the Disability Services will recommend special examination arrangements to the Department of Statistics and the Examinations Office.

More information (including important deadlines) can be found here: warwick.ac.uk/services/academicoffice/examinations/students/special_examination_arrangements

Recommendations for exam arrangements on disability grounds are evidence based and informed by supporting documentation. Once accepted, these arrangements will continue for the duration of your degree course.

More information (as well as types of special examination arrangements) can be found on the following web-pages:

warwick.ac.uk/services/disability/howwecanhelp/examinations

warwick.ac.uk/services/disability/howwecanhelp/adjustments

Cases of temporary illness or injury will be granted a temporary arrangement at the time, or will be taken into account by the examination board after your examination has taken place, these will not carry over to the following year. If you have a temporary and/or unexpected illness, injury or condition that may result in you needing additional support for your study or examinations (for example a broken limb requiring a scribe for examinations or lectures) you should submit medical evidence of your condition to the Student Support Office who will liaise with the Examinations Office with regard to agreeing any additional temporary support requirements or reasonable adjustments ahead of your examination taking place.

If you are unable to provide such evidence for support arrangements to be put in place in good time, consideration for these types of matters should be applied for through the mitigating circumstances procedure. The mitigating circumstances form can be found online: warwick.ac.uk/fac/sci/statistics/courses/currentstudents/forms/mitigating_circumstances_form_statistics.pdf.

If you have any questions relating to this please contact the Student Support Office or refer to the following weblink: warwick.ac.uk/services/aro/dar/quality/categories/examinations/policies/u_mitigatingcircumstances

For referral to the University's Disability Coordinator, please speak to your Personal Tutor, the departmental Disability Representative, the Student Support Office, or visit warwick.ac.uk/services/disability.

7.5.1 Religious Observance

If for reasons of religious observance you would prefer not to take examinations or class tests on a particular day(s), please notify the Student Support Office, which will supply you with a Religious Observance Form (Examinations) for you to complete, which will inform the Academic Office (for Examinations) of your preferences. Please note that there are strict deadlines by which religious observance forms must be submitted (usually by the end of term 1). While the University will make every reasonable effort to avoid the times/dates in your request, owing to the logistical constraints and difficulties involved in scheduling examinations, it may prove impossible to avoid those times/dates for your examinations. In such an event you may wish to ask your academic department to see if they can make any alternative arrangements for you, or ask the relevant University Chaplain if they could help in terms of chaperoning arrangements. Therefore please

note that submission of the religious observance request form does NOT mean that your examinations will definitely not be set on the dates/times you would wish to avoid.

For more information please see: warwick.ac.uk/services/academicoffice/-examinations/students/special_examination_arrangements.

7.6 Health and Safety

The Departmental Safety Officer is the Departmental Administrator, Mrs Paula Matthews, and any matters relating to safety within the department should be referred to her by email: paula.matthews@warwick.ac.uk.

7.7 Complaints Procedures

The University has a clear three-stage Student Complaints Resolution Pathway for informal and formal concerns or complaints. Further information about the Pathway, including the rules and required timescales, are set out in the formal procedure:

warwick.ac.uk/services/feedbackcomplaints/students/complaints/procedure

Stage 1 of the Student Complaints Resolution Pathway is through front-line/local resolution. Many problems can be dealt with on an informal basis, and in the first instance you can contact your personal tutor, or a member of the SSLC. You can also get advice from the Faculty Senior tutor and the Students Union.

If you then wish to pursue the matter more formally, Stage 2 of the Student Complaints Resolution Pathway is a formal departmental investigation which can be initiated via the website above.

Stage 3 of the Student Complaints Resolution Pathway is to initiate a formal Institutional Review.

Early resolution of the complaint should be sought and it is expected that the vast majority of complaints will be resolved through a local/front-line response. Should any complaint not be resolved through this internal three stage process, students are able to request that their complaint be independently reviewed by the Office of the Independent Adjudicator (OIA).

Appeals against decisions of the examination board are subject to special procedures. Further details are available at Section 5.10.

7.8 Additional Costs

All Academic Departments at the University of Warwick are required to declare any additional/hidden course costs that may be incurred by students enrolled on

our degree programmes. Other than purchasing a suitable calculator (see Section 5.16) the only other costs that can be incurred are:

- The non-compulsory purchase of Core Technical (CT) notes from the Student Support Office, for any student wanting to pursue modules associated with CT actuarial exams, at a cost of £15 per book.
- The purchase of additional printer credits. A £5 credit is applied to each student at the start of every academic year, enough for 100 single-sided A4 Black & White pages to be printed. Additional credits can be purchased on the following webpage: printercredits.warwick.ac.uk.

8 Careers

8.1 What Do Statistics Graduates Do?

Graduates from the Department of Statistics enter a diverse range of careers. Many opt to work within the Financial Services sector with the Actuarial, Accounting and Investment Banking opportunities being particular favourites. These roles often involve the study for professional qualifications such as ACA, CIMA, CFA and the actuarial examinations. Other frequent career choices include e-Commerce, Business and Industrial Consultancy, Operational Research, Marketing, Scientific Research, and Government. Statistics graduates develop a strong range of transferable skills including excellent numerical, problem-solving and analytical abilities. These along with your ability to communicate complex ideas effectively are highly sought after by employers.

A number of students decide to continue in academia, studying for either a Statistics related Masters or PhD. Alternative study routes have included the study of Management Science & Operational Research or the PGCE teaching qualification.

8.2 Careers Guidance

Making good career decisions involves thinking about your interests and values and also spending time researching possible occupations. If you would like to discuss your ideas or feel you need support with working through your options and developing ideas then please book an appointment with a Careers Consultant at warwick.ac.uk/services/careers To contact Student Careers with general questions about support, events etc., please email careers@warwick.ac.uk.

8.3 Careers Information Resources

The Student Careers and Skills website gives you access to a range of information on career planning, job seeking, interview skills, and much more. Don't

forget to check out the vacancy database which provides access to hundreds of opportunities for work experience and internships, as well as graduate vacancies: warwick.ac.uk/services/careers/findingwork

8.4 Careers Events

You can keep up to date with the latest careers news and events by joining the Warwick Statistics Careers Facebook Page:

<https://www.facebook.com/groups/548688985255792/>

An extensive programme of events including skills development workshops, presentations on particular sectors and mock interviews are available throughout the year.

Don't miss the valuable opportunity to meet employers face to face – remember most of these events occur in weeks 1-7 of the autumn term as do many deadlines for summer programmes and graduate roles. Explore your options, compare organisations and find out what skills employers are looking for by visiting the Careers Fairs, employer presentations and alumni evenings. You will need to book online for most events as places are limited – go to warwick.ac.uk/services/careers

8.5 Making the Most of Your Time at University

Alongside the achievement of a good degree, employers are looking for students who have maximised the use of their time at university and got involved in a wide range of extracurricular activities. Many students help in the running of societies which helps to build personal skills such as communication, leadership, problem solving and team working.

Work experience in general can greatly increase your chances of receiving a graduate job offer. To explore opportunities for gaining experience both on and off campus, visit our Experience Portal: warwick.ac.uk/services/careers/workexperience.

Both employers and postgraduate course providers will expect you to be knowledgeable and assertive about the intellectual and personal skills which you have gained during your degree course. They are concerned about what you can do, in addition to what you have studied, and will require you to substantiate the claims you make when making applications. They will look at your past experiences, choices and behaviour to find evidence of these skills. If you want to access a range of skills workshops around both academic and professional skills, check out warwick.ac.uk/services/skills.

8.6 International Students

If you are hoping to find employment in the UK after graduation, and English is not your first language, think about ways in which you can improve your conversational English. To be successful at an interview you will need very good verbal communication skills, and sometimes our international students – despite having excellent academic results – will not be able to progress beyond this point because their spoken English isn't good enough.

The Centre for Applied Linguistics (CAL) runs classes for our non-native speaking students: see 'Learning English' at warwick.ac.uk/fac/soc/al. You can apply what you have learnt by joining clubs and societies and regularly mixing with students who are native English speakers.

8.7 Letters of Reference

When you apply for employment or further training you will probably be asked for two academic referees. One of these will normally be your Personal Tutor, the other should be someone familiar with your work such as a lecturer who has marked some of your coursework or supervised a project - a lecturer who knows you, in other words, not simply one whose module you enjoyed. Please note:

- Obtain early agreement from your referees to write references for you, and keep them informed of the applications you make.
- Request references at least 2 weeks before any related deadline, and provide the referees with up-to-date supporting material (CV, personal statement, etc.)
- If you have difficulty finding a suitable person to act as a second referee, then the department has a process by which an academic member of staff will write a reference for you. If you wish to use this service you should contact the Student Support Office as soon as possible, giving details of your applications and providing your CV, personal statement etc. Note however that references written by this system are likely to be limited to factual information, such as your academic performance to date.
- Please allow for more time during the months of summer vacation.

8.8 Careers in Teaching: Warwick Volunteers

Warwick in Schools: If you are intending to take a PGCE (Post Graduate Certificate in Education) after your degree, or have secondary teaching as one of your career options, then Warwick in Schools could be for you!

As one of the leading providers of Initial Teacher Training, the University's Institute of Education is once again offering undergraduates the opportunity to try a 'taster' of teaching. If you join the Warwick in Schools scheme (WinS) you will

receive bursary funded training which will prepare you for the expectations of a professional environment. You will look at some of the issues concerned with effective teaching and learning, and you will be given help and support to prepare for your school visits. If you then decide to do your PGCE at Warwick, you would achieve a ‘training credit’ which would mean that you could complete the course earlier in the year than normal.

Warwick Volunteers: Student Tutoring: Volunteering as a Student Tutor is a great way to decide if teaching is the career for you. The Student Tutoring project places volunteers in a classroom in Primary, Secondary and SEN schools across Coventry, Leamington, Kenilworth and Warwick. Volunteers will take on a teaching assistant role and work alongside class teachers to provide support to pupils. Placements are arranged to suit each individual and volunteers are able to choose the type of school, location and subject of their choice.

Sign-up for the project opens at the end of September, and can be accessed through the following web-link: warwick.ac.uk/about/community/volunteers/volunteering-tutoring

8.9 Actuarial Exemptions

The Institute and Faculty of Actuaries (IFoA) is making major changes to the curriculum with consequences for the system of exemptions. Details can be found at www.actuaries.org.uk/studying/curriculum-2019. Students admitted up to and including September 2018 will be able to study modules described below and their CT exemptions will be converted into exemptions for subjects in the new curriculum as described in the 2019 Curriculum structure and transfer arrangements from the current curriculum and as detailed on the Actuarial Exemptions webpage:

warwick.ac.uk/fac/sci/statistics/courses/actuarialexemptions.

Exemptions from the professional actuarial examinations are not given automatically. The actuarial profession only awards exemptions if a student has achieved a satisfactory overall percentage as well as a satisfactory percentage on the relevant University courses. Our current syllabus enables exemptions as follows:

- CT1 Financial Mathematics through ST334 Actuarial Methods
- CT2 Finance and Financial Reporting through ST335 Finance and Financial Reporting
- CT3 Probability and Mathematical Statistics through ST218 and ST219 Mathematical Statistics (A & B) for students in the Department of Statistics. (Students from other Departments may gain exemption from CT3 through satisfactory performance in all of the following modules: ST111 Probability A, ST112 Probability B, and ST220 Introduction to Mathematical Statistics.)

- CT4 Models through ST338 Actuarial Models
- CT5 Contingencies through ST345 Life Contingencies
- CT6 Statistical Methods through ST402 Risk Theory
- CT7 Economics through EC106 Introduction to Quantitative Economics and EC220/EC221 Mathematical Economics (A and B) or
- CT7 Economics through EC106 Introduction to Quantitative Economics and EC204 Economics 2
- CT8 Financial Economics through ST339 Introduction to Mathematical Finance and ST401 Stochastic Methods in Finance

Recommendations for exemptions from CT1, CT2, CT4, CT5, CT6, and CT8 will be made following the third and fourth year examinations. CT3 and CT7 have to be applied for independently. Further information about the actuarial examination system can be found at www.actuaries.org.uk. In particular information on applying for exemptions can be found at actuaries.org.uk/students/pages/exemptions-exams

8.10 Final Thoughts

Make sure you enjoy your time at Warwick and take advantage of the vast array of opportunities on offer. Visit the Centre for Student Careers & Skills sooner rather than later. For details, see warwick.ac.uk/careers. The Centre for Student Careers & Skills looks forward to welcoming you.

9 People and Dates

9.1 Dates of Terms

warwick.ac.uk/study/termdates

Academic year 2018-19

Term 1 (weeks 1-10)	Monday 1st October 2018 - Saturday 8th December 2018. Lectures commence Monday 1st October.
Term 2 (weeks 11-20)	Monday 7th January 2019 - Saturday 16th March 2019. Lectures commence Monday 7th January.
Term 3 (weeks 21-30)	Wednesday 24th April 2019 - Saturday 29th June 2019. Lectures commence Wednesday 24th April.

Academic year 2019-20

Term 1 (weeks 1-10) Monday 30th September 2019 - Saturday
7th December 2019

9.2 Contact Details

The normal point of contact for general information is the Student Support Office. The Office is open to student enquiries Monday to Friday (excluding holidays) from 9:30 to 12:00 noon and from 14:00 to 16:00. If you need to contact the Department urgently, in the first instance you should contact the Student Support Office in person, by email, or by phone.

Postal Address Student Support Office, Department of
Statistics, University of Warwick, Coventry,
CV4 7AL

Email Address stats.ug.support@warwick.ac.uk

Telephone +44 (0)2476 523066 (Internal: 23066)

In the event of an incident requiring the emergency services (ambulance, police or fire and rescue), telephone 22222 (Internal) or 024 76 522222 (External).

9.3 Officers 2018-2019

U/G Course Director	Dr Elke Thonnes
U/G Senior Tutor	Dr Dario Spanò
SSLC Academic Convenor	Dr Rachel Hilliam
Director of Student Experience and Progression	Dr Rachel Hilliam
Intercalated Year Coordinator	Dr Rachel Hilliam
Head of Student Engagement and Teaching Quality Assurance	Dr Lynne Bayley
Disability Representative	Dr Ric Crossman
Undergraduate Publicity	Dr Julia Brettschneider
Head of Department	Professor Barbel Finkenstadt-Rand
Deputy Head of Department (<i>Teaching and Learning</i>)	Professor David Hobson
Secretary of the Board of Examiners	Dr Larbi Alili
First Year Examination Secretary	Dr Nayia Constantinou
Second Year Examination Secretary	Dr Ric Crossman

Undergraduate Admissions Officers

Dr Anastasia
Papavasiliou & Dr Julia
Brettschneider

Academic Programmes Manager
Undergraduate Support and Timetable
Officer

Mr David Kinmond
Miss Kay Jones

Undergraduate Support and Mitigating
Circumstances Officer

Mrs Jessica
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