

Royal Holloway, University of London

Programme specification for an undergraduate award

BA Mathematics and Music (GW13)

Section 1 – Introduction to your programme

This programme specification is a formal document, which provides a summary of the main features of your programme and the learning outcomes that you might reasonably be expected to achieve and demonstrate if you take full advantage of the learning opportunities that are provided. Further information is contained in the College prospectus, and in various handbooks, all of which you will be able to access online. Alternatively, further information on the College's academic regulations and policies can be found [here](#). Further information on the College's Admissions Policy can be found [here](#).

Your degree programme in BA Mathematics and Music is delivered in three stages, each of which comprises one year of full-time study during which you must follow modules to the value of 120 credits.

In stage one the mandatory modules in the Department of Mathematics seek to provide a broadly based introduction to mathematics, which will develop manipulative skills, understanding of the key concepts and the ability to construct logical arguments. In stage two, you will take modules which continue your study of abstract pure mathematics and its applications. In stage three, you take modules to the value of 120 credits and are advised on appropriate combinations and pathways depending on your interests, stage one and two options, and possible future career paths. You may choose to undertake an extended project.

For joint and combined honours programmes, please refer to the programme specification for your secondary department's corresponding single honours programme for further information on educational aims, and learning outcomes.

While Royal Holloway keeps all the information made available under review, programmes and the availability of individual modules, especially optional modules are necessarily subject to change at any time, and you are therefore advised to seek confirmation of any factors which might affect your decision to follow a specific programme. In turn, Royal Holloway will inform you as soon as is practicable of any significant changes which might affect your studies.

The following is brief description for some of the most important terminology for understanding the content of this document:

Degree course – May also be referred to as 'degree programme' or simply 'programme', these terms refer to the qualification you will be awarded upon successful completion of your studies.

Module – May also be referred to as 'course', this refers to the individual units you will study each year to complete your degree course. Undergraduate degrees at Royal Holloway comprise a combination of modules in multiples of 15 credits to the value of 120 credits per year. On some degree courses a certain number of optional modules must be passed for a particular degree title.

Section 2 – Programme details			
Date of specification update	February 2022	Location of study	Egham Campus
Programme award and title	BA Mathematics and Music	Level of study	Undergraduate
Programme code	1279	UCAS code	GW13
Year of entry	2022/23		
Awarding body	Royal Holloway, University of London		
Department or school	Mathematics	Other departments or schools involved in teaching the programme	Department of Music
Mode(s) of attendance	Full-time	Duration of the programme	Three years
Accrediting Professional, Statutory or Regulatory Body requirement(s)	N/A		
Link to Coursefinder for further information:	https://www.royalholloway.ac.uk/studying-here/	For queries on admissions:	study@royalholloway.ac.uk .

Section 3 – Degree programme structure

3.1 Mandatory module information

The following table summarises the mandatory modules which students must take in each year of study

Stage	Module code	Module title	Contact hours*	Self-study hours	Written exams**	Practical assessment**	Coursework**	Credits	FHEQ level	Module status (see below)
1	MT1710	Calculus I	30	120	60%	0	40%	15	4	MC
1	MT1720	Calculus II	30	120	60%	0	40%	15	4	MC
1	MT1810	Introduction to Pure Mathematics	39	111	60%	10%	30%	15	4	MC
1	MT1820	Linear Algebra I	39	111	60%	10%	30%	15	4	MC
1	MU1110	Theory & Analysis	20	130	100%	0	0	15	4	MC
2	MT2320	Probability Theory	30	120	60%	0	40%	15	5	MC
2	MT2800	Linear Algebra II	30	120	60%	0	40%	15	5	MC

This table sets out the most important information for the mandatory modules on your degree programme. These modules are central to achieving your learning outcomes, so they are compulsory, and all students on your degree programme will be required to take them. You will be automatically registered for these modules each year. Mandatory modules fall into two categories; 'condonable' or 'non-condonable'.

In the case of mandatory 'non-condonable' (MNC) modules, you must pass the module before you can proceed to the next year of your programme, or to successfully graduate with a particular degree title. In the case of mandatory 'condonable' (MC) modules, these must be taken but you can still progress or graduate even if you do not pass them. Please note that although Royal Holloway will keep changes to a minimum, changes to your degree programme may be made where reasonable and necessary due to unexpected events. For example; where requirements of relevant Professional, Statutory or Regulatory Bodies have changed and programme requirements must change accordingly, or where changes are deemed necessary on the basis of student feedback and/or the advice of external advisors, to enhance academic provision.

*Contact hours come in various different forms, and may take the form of time spent with a member of staff in a lecture or seminar with other students. Contact hours may also be laboratory or, studio-based sessions, project supervision with a member of staff, or discussion through a virtual learning environment (VLE). These contact hours may be with a lecturer

or teaching assistant, but they may also be with a technician, or specialist support staff. It is intended that these contact hours will face-to-face as far as possible, but in certain unavoidable situations, these may take place virtually.

**The way in which each module on your degree programme is assessed will also vary, however, the assessments listed above are all 'summative', which means you will receive a mark for it which will count towards your overall mark for the module, and potentially your degree classification, depending on your year of study. On successful completion of the module you will gain the credits listed. 'Coursework' might typically include a written assignment, like an essay. Coursework might also include a report, dissertation or portfolio. 'Practical assessments' might include an oral assessment or presentation, or a demonstration of practical skills required for the particular module.

3.2 Optional modules

In addition to mandatory modules, there will be a number of optional modules available during the course of your degree. The following table lists a selection of optional modules that are likely to be available. However, not all may be available every year. Although Royal Holloway will keep changes to a minimum, new options may be offered or existing ones may be withdrawn. For example; where reasonable and necessary due to unexpected events, where requirements of relevant Professional, Statutory or Regulatory Bodies (PSRBs) have changed and programme requirements must change accordingly, or where changes are deemed necessary on the basis of student feedback and/or the advice of External Advisors, to enhance academic provision. There may be additional requirements around option selection, so it is important that this specification is read alongside your department's Student Handbook, which you can access via their [webpage](#).

Year 1	Year 2	Year 3
See section 3.3 below for options in Music	Mathematics: MT2220 Vector Calculus	Mathematics: MT3000 Mathematics Project
	Mathematics: MT2500 Scientific Programming	Mathematics: MT3050 Advanced Skills
	Mathematics: MT2720 Ordinary Differential Equation and Fourier Analysis	Mathematics: MT3090 Mathematics in the Classroom
	Mathematics: MT2830 Ring Theory	Mathematics: MT3110 Number Theory I
	Mathematics: MT2900 Complex Analysis	Mathematics: MT3280 Non-Linear Dynamical Systems: Routes to Chaos
	Music: MU2338 Introduction to Jazz	Mathematics: MT3320 Statistical Inference
	Music: MU2205 Practical Performance I	Mathematics: MT3360 Markov Chains and Applications
	Music: MU2210 Solo Performance	Mathematics: MT3450 Quantum Information Theory

		Mathematics: MT3470 Financial Mathematics I
		Mathematics: MT3480 Financial Mathematics II
		Mathematics: MT3690 Game Theory
		Mathematics: MT39100 - Topology
		Music: MU2253 Mozart's Operas
		Music: MU2257 Sounds and Cultures
		Music: MU2343 Orchestral Performance

3.3 Optional module requirements

Stage One:

The curriculum in **Music** is as follows:

Students on Required Intensive Theory entry must take the **mandatory condonable MU1111 Fundamentals of Music Theory**, then choose 30 credits of additional modules, including no more than 15 credits from List D; while all other students choose 45 credits of additional modules, including at least 15 credits from Lists B or C; and no more than 15 credits from List D.

List A:

MU1112 Creative Composition Techniques (15 credits)

MU1120 Introduction to Composing with Music Technology (15 credits)

List B:

MU1114 A Very Short History of Music (15 credits)

MU1115 Introduction to Historical Musicology (15 credits)

List C:

MU1116 Introduction to World Music (15 credits)

MU1117 Contemporary Debates in Music (15 credits)

List D:

MU1118 Solo Performance (15 credits)

MU1119 Creative Ensemble Performance (15 credits)

Stage Two:

You must take options to the value of 60 credits from stage 2 modules offered by the Department of **Mathematics**.

Students choose level 5 Music modules to the value of 60 credits from six Lists of optional modules provided by the Department, including at least one module from three different Lists.

Stage Three:

You must choose 60 credits of options from the list of stage 3 modules offered by the Department of **Mathematics**.

Students choose **Music** modules to the value of 60 credits drawn from level 6 modules.

Note:

(i) The curriculum above reflects the equal division of the 12 modules (360 credits) of a Joint Honours programme into 6 modules (180 credits) of each component. Over stages two and three the Maths curriculum may be decreased or increased by up to 30 credits to give the permitted minimum of 150 credits and maximum of 210 credits in Maths. Likewise over stages two and three the Music curriculum may be decreased or increased by up to 30 credits to give the permitted minimum of 150 and maximum of 210 credits in Music.

(ii) Within stages two and three, and subject to the approval of the Departments concerned, up to 30 'elective' credits of level 5 or level 6 modules in other Departments may be substituted for Music modules.

(iii) Prerequisites may apply to optional modules.

Section 4 - Progressing through each year of your degree programme

For further information on the progression and award requirements for your degree, please refer to Royal Holloway's [Academic Regulations](#). As part of your degree programme you may also be required to complete a module to develop your academic writing skills. This module does not carry credit but passing it is a requirement to progress to the next year of study.

All first year students on single, joint or combined honours courses offered all or in part by the School of Humanities, School of Performing and Digital Arts, or department of Politics, International Relations and Philosophy are required to pass a Moodle-based writing skills quiz in order to progress into the second year of study. The pass mark for the test is 60%. Certificates of Distinction are awarded to students who achieve at least 80% in the quiz. Students may attempt the quiz as often as they wish with no penalties or capping. Students who meet the requirements for progression as stipulated in the [College's Undergraduate Regulations](#) (Section: Conditions for progression to the next stage) but fail to pass the Moodle-based quiz will not be permitted to progress into their second year of academic study at the College.

Section 5 – Educational aims of the programme

The aims of this programme are:

- to provide students with technical manipulative skills, the ability to read and write in the compressed language of mathematics, and the ability to distil a problem into a mathematical description of its essential detail;
- to ensure that students gain an appreciation of, and interest in, the logical structure of mathematics, and its use as an analytical and predictive tool in applications;
- to offer a wide range of optional modules to suit students' interests and strengths;
- to provide access to personal, academic and pastoral support;
- to enable students, on graduation, to compete effectively in employment or postgraduate study.

Section 6 - Programme learning outcomes

In general terms, the programmes provide opportunities for students to develop and demonstrate the following learning outcomes. (*Categories – Knowledge and understanding (K), Skills and other attributes (S), and Transferable skills (*)*)

<ol style="list-style-type: none"> 1. Of mathematical methods (K); 2. Of mathematical concepts such as number and function (K); 3. Of abstract structures such as groups, matrices, and fields (K); 4. Of some results from a range of major areas of mathematics, statistics or operational research (K); 5. Of at least one major area of applications in which the mathematics is used in a serious manner and is essential for proper understanding (K); 6. A high level of numeracy (S); 7. Ability to manipulate and analyze complex mathematical expressions accurately (S); 8. Ability to understand the role of logical mathematical argument and deductive reasoning, including formal proof (S); 9. Familiarity with computer methods in mathematics and statistics (S); 10. Ability to formulate problems in mathematical or statistical form using appropriate notation (S); 11. The ability to solve equations or inequalities arising from a problem analytically or numerically, and to interpret the results (S); 	<ol style="list-style-type: none"> 12. Accurate analysis of a situation, the factors involved and possible approaches to solution. This is embedded in a general ethos of numeracy and of analytical approaches to problem solving (S); 13. Ability to take theoretical knowledge gained in one area and apply it elsewhere (S); 14. Ability to make a sequence of logical steps, and reflect on the result (S); 15. Ability to communicate mathematical results clearly, to both mathematicians and lay persons (S); 16. Spatial awareness in two and three dimensions (S); 17. Good general skills of time-management and organization (S*); 18. To learn independently, using a variety of media including books, learned journals, the internet etc (S*); 19. To work independently with persistence and patience, pursuing the solution of problems to their conclusion (S*); 20. Develop IT skills, including word-processing and use of the internet (S*); 21. Personal motivation and the planning of a career path (S*); 22. Good written and oral communication skills, which enable them to write coherently and turn a rough draft into a convincing argument and contribute to discussions (S*); 23. Ability to work together with others as a team (S*).
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Section 7 - Teaching, learning and assessment

Teaching and learning is mostly by means of lectures, small group tutorials, problem-solving workshop sessions, written and oral feedback on coursework, practical sessions in statistics and computational mathematics, guided independent study and oral presentations. You are in addition encouraged to read around the subject, and at the end of the first and second stages you write essays or projects on topics of your own choice. Assessment is typically by formal examinations and in certain modules in-term tests, projects, coursework essays and oral presentations. Full details of the assessment methods for individual modules may be obtained from the [Department](#).

Section 8 – Additional costs	
Music: £50	
These estimated costs relate to studying this particular degree programme at Royal Holloway. General costs such as accommodation, food, books and other learning materials and printing etc., have not been included, but further information is available on our website.	

Section 9 – Indicators of quality and standards	
QAA Framework for Higher Education Qualifications (FHEQ) Level	4-6
Your programme is designed in accordance with the FHEQ to ensure your qualification is awarded on the basis of nationally established standards of achievement, for both outcomes and attainment. The qualification descriptors within the FHEQ set out the generic outcomes and attributes expected for the award of individual qualifications. The qualification descriptors contained in the FHEQ exemplify the outcomes and attributes expected of learning that results in the award of higher education qualifications. These outcomes represent the integration of various learning experiences resulting from designated and coherent programmes of study.	
QAA Subject benchmark statement(s)	http://www.qaa.ac.uk/quality-code/subject-benchmark-statements
Subject benchmark statements provide a means for the academic community to describe the nature and characteristics of programmes in a specific subject or subject area. They also represent general expectations about standards for the award of qualifications at a given level in terms of the attributes and capabilities that those possessing qualifications should have demonstrated.	

Section 10 – Further information

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate when taking full advantage of the learning opportunities that are available. More detailed information on modules, including teaching and learning methods, and methods of assessment, can be found via the online [Module Catalogue](#). The accuracy of the information contained in this document is reviewed regularly by the university, and may also be checked routinely by external agencies, such as the Quality Assurance Agency (QAA).

Your programme will be reviewed regularly, both by the university as part of its cyclical quality enhancement processes, and/or by your department or school, who may wish to make improvements to the curriculum, or in response to resource planning. As such, your programme may be revised during the course of your study at Royal Holloway. However, your department or school will take reasonable steps to consult with students via appropriate channels when considering changes. All continuing students will be routinely informed of any significant changes.

Section 11 – Intermediate exit awards (where available)

You may be eligible for an intermediate exit award if you complete part of the programme as detailed in this document. Any additional criteria (e.g. mandatory modules, credit requirements) for intermediate awards is outlined in the sections below.

Award	Criteria	Awarding body
Diploma in Higher Education (DipHE)	Pass in 210 credits of which at least 90 must be at or above FHEQ Level 4 and at least 120 of which must be at or above FHEQ Level 5	Royal Holloway and Bedford New College
Certificate in Higher Education (CertHE)	Pass in 120 credits of which at least 90 must be at or above FHEQ Level 4	Royal Holloway and Bedford New College

Section 12 - Associated award(s)

BA Mathematics and Music (GW13)