Royal Holloway, University of London
Course specification for a postgraduate award
MSc Applied Data Science (3829)

Section 1 – Introduction to your course

This course specification is a formal document, which provides a summary of the main features of your course 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.

The importance of data science grows year on year, with sectors including healthcare, manufacturing, retail, finance and others reliant on the insights that accurate data capture and analysis can provide. Your degree course in MSc Applied Data Science is intended as a conversion masters, to enable students from a wide variety of backgrounds to obtain the necessary knowledge, understanding and ability to apply that understanding to embark upon a career in data science. This will involve your acquiring skills in gathering, managing, processing, and analysing data sets and extracting valuable intelligence from them. The area has significant potential for graduate careers, and there is significant demand for skilled personnel, both in the UK and internationally.

While Royal Holloway keeps all the information made available under review, courses 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 course. In turn, Royal Holloway will inform you as soon as is practicable of any significant changes which might affect your studies.

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

Degree course – Also referred to as 'programme', this term refers to the qualification you will be awarded upon successful completion of your studies. 'Courses' were formerly known as 'programmes' at Royal Holloway.
Module – This refers to the credits you will study each year to complete your degree course. Postgraduate taught degrees at Royal Holloway comprise 180 credits. On some degree courses a certain number of optional modules must be passed for a particular degree title. 'Modules' were formerly known as 'course units' at Royal Holloway.

Section 2 – Course details			
Date of specification update	December 2024	**Location of study**	Egham
Course award and title	MSc Applied Data Science	**Level of study**	Postgraduate
Course code	3829	**Year of entry**	2026/27
Awarding body	Royal Holloway, University of London		
Department or school	Department of Computer Science, EPMS	**Other departments or schools involved in teaching the course**	Electronic Engineering,
Mode(s) of attendance	Full time	**Duration of the course**	One year (52 weeks) full-time
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:**	https://royalholloway.ac.uk/applicationquery

Section 3 – Degree course structure

3.1 Mandatory module information

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

Module code	Module title	Credits	FHEQ level	Module status (Mandatory Condonable MC or Mandatory Non-Condonable MNC
CS5710	Computing for Data Analysis	30	7	MC
CS5730	Multi-dimensional Data Processing	15	7	MC
EE5010	Research Methods	15	7	MC
CS5720	Applications of Data Science	30	7	MC
CS5750	Methods of Visualisation and Exploratory Analysis	15	7	MC
CS5900	Ethics in Advanced Computing and Artificial Intelligence	15	7	MC
CS5721	Individual Project in Applied Data Science	60	7	MNC

This table sets out the most important information for the mandatory modules on your degree course. These modules are central to achieving your learning outcomes, so they are compulsory, and all students on your degree course 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 course, 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 course 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 course 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.

3.2 Optional modules

In addition to mandatory modules, there may be a number of optional modules available during the course of your degree. 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 course 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; please contact the Department for further information.

There are no provisions for optional modules on the course.

Section 4 - Progressing through each year of your degree course

For further information on the progression and award requirements for your degree, please refer to Royal Holloway's Academic Regulations.

Progression throughout the year/s is monitored through performance in summative or formative coursework assignments. Please note that if you hold a Student Visa and you choose to leave (or are required to leave because of non-progression) or complete early (before the course end date stated on your CAS), then this will be reported to UKVI.

All postgraduate taught students are required to take and pass the non-credit bearing Moodle-based Academic Integrity module SS1001 in order to be awarded. The pass mark for the module assessment is stated in the on-line Academic Integrity Moodle module. Students may attempt the assessment as often as they wish with no penalties or capping. Students who otherwise meet the requirements for award as stipulated in the Academic Taught Regulations but fail to pass the Moodle-based Academic Integrity module will not be awarded.

Section 5 – Educational aims of the course

The aims of this course are to:

- Equip students with an advanced understanding of principal themes in data science and its applications.
- Enable students to become specialists in applied data science capable of handling and analysing different types of data in different fields, including business (financial information, market trends, and customer behaviours), experimental sciences, health inter alia).
- Equip students with an advanced understanding of the application of data science techniques and approaches.
- Enable students to evaluate various aspects of data science applications.

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Section 6 - Course learning outcomes

In general terms, the courses 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 (*)*)

• conceptual understanding of methods of linear algebra and probability as necessary to work with modern machine learning algorithms (K); • application and critical evaluation of data modelling (K); • conceptual understanding, application, and critical evaluation of methods of methods of machine learning, statistics, and data mining (K); • conceptual understanding and critical evaluation of methods and techniques such as clustering, regression, support vector machines, boosting, decision trees, and neural networks (K)	• a highly analytical approach to problem solving (S,*); • ability to extract value and insight from data (S,*); • ability to use effectively machine learning models and statistical models (S); • ability to work with software and programming languages (including Python) to automate tasks and perform data analysis (S); • identify and analyse issues of ethical significance in applications of technology (S); • ability to present logical and coherent written arguments of varying lengths (S,*); • enhanced time management and organisational skills including working to deadlines, prioritising tasks, organising work-time (S,*).

Section 7 - Teaching, learning and assessment
Teaching and learning on the course is closely informed by the active research of staff, particularly in the areas of machine learning and data science. Teaching and learning is mostly by means of lectures, small group tutorials, laboratory sessions, coursework assignments, and a supervised individual project. Assessment of knowledge and understanding is typically by coursework assignments, quizzes, examinations, and a dissertation. A coursework assignment is usually a problem solving exercise that consists of theoretical questions and practical tasks applying the methods to real data. Contact hours come in various 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. The way in which each module on your degree course is assessed will also vary, however, for the assessments listed as 'summative', 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 More detailed information on modules, including teaching and learning methods, and methods of assessment, can be found via the online Royal Holloway Curriculum 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).

Section 8 – Additional costs
There are no single associated costs greater than £50 per item on this degree course.
These estimated costs relate to studying this particular degree course 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	7
Your course 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 courses 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 courses 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– Intermediate exit awards (where available)		
You may be eligible for an intermediate exit award if you complete part of the course 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**
PG Diploma	Passes in at least 120 credits, with fails of between 40% to 49% for up to 40 credits condonable (with the exception of any course specific requirements).	Royal Holloway and Bedford New College
PG Certificate	Passes in at least 60 credits with no condonable fails	Royal Holloway and Bedford New College