



## BSc (Hons) Data Science Programme Specification

### 1. General Information

UCAS Code	Award	Programme Title	Expected Duration	Study Mode
N/A	BSc (Hons)	Data Science	3 years	Full-time Part-time 1 Part-time 2
		<b>Programme Code</b>	4 years	
		UK-LIBF-BADSC	6 years	
	<b>Exit Awards</b>	<ul style="list-style-type: none"> <li>• BSc (non-Hons)</li> <li>• Diploma of Higher Education</li> <li>• Certificate of Higher Education</li> </ul>		

Credit Count	<b>360 FHEQ credits</b>
Awarding Institution	The London Institute of Banking & Finance
Teaching Institution	The London Institute of Banking & Finance
Delivery Modes	<ul style="list-style-type: none"> <li>• Face-to-face</li> <li>• Blended</li> <li>• Online - Synchronous</li> <li>• Online - Asynchronous</li> </ul>

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<b>Record of modifications:</b>	

## 2. Programme Overview

### Programme Summary

As a core discipline and key enabler of digitalisation, the field of Data Science is rapidly growing and plays an essential role in many industries. With digitalisation processes continuing to advance and the amount of data generated continuing to increase, there is a growing need for graduates with strong data science skills.

The BSc (Hons) Data Science programme provides you with a comprehensive understanding of the fundamental concepts and principles of data science. The programme covers a range of topics such as machine learning, statistical analysis and data analysis and visualization. You also gain practical skills in programming languages such as Python and are introduced to the ethical considerations relevant to the field.

The programme also provides a wide range of electives which allows you to gain insights into industry-relevant fields and areas of practical application of data science such as Marketing and Sales, Transportation and Logistics, and Engineering and Finance.

### Programme Aims

The BSc (Hons) Data Science aims to:

- provide you with an understanding of the fundamental concepts and theoretical underpinnings of data science, including mathematics, statistical methods, and machine learning as well as methodological subjects such as exploratory data analysis, and how these pertain to the field of data science as a whole.
- develop your knowledge of programming languages and core concepts of data science and their application to enable you to collect, manipulate, and analyse datasets.
- equip you with critical thinking and problem-solving skills to select and apply data science techniques to given problems, to assess the quality and validity of data and analysis results and draw meaningful insights from data.
- provide you with effective academic and project planning skills to manage and complete set tasks and data science projects.
- enhance your awareness of the ethical considerations in data science, enabling you to critically evaluate the ethical and societal impact of data science methods as a basis for responsible and ethical professional decision-making.
- provide you with a holistic understanding of data-driven decision-making through a wide-range of elective modules giving insights into industry-relevant fields and fields of practical application of data science.

## Employability & Graduate Outcomes

Graduates of this programme are likely to pursue careers in a number of areas in data science and data-science related fields including positions in data analysis, data engineering and data analytics consultancy. This programme of study should support graduates in developing the following employability skills:

- digital, technical, and statistical literacy
- critical thinking and problem-solving skills
- communication and collaboration skills
- numerical and analytical skills
- professional responsibility and ethical awareness

### 3. Intended Learning Outcomes of the Programme

This programme has been developed in accordance with the QAA Subject Benchmark Statement for Computing (C) (2022).

Please note: The programme's intended learning outcomes below are described at the Bachelor's with Honours level (Level 6).

On successful completion of this programme, you will be expected to:

LO1	Demonstrate a systematic understanding of mathematical and statistical fundamentals for data science, as well as engineering topics encompassing data infrastructure, programming, and software engineering. (C 4.6)
LO2	Demonstrate comprehensive knowledge of the main theories, principles and methodologies of data science, as well as the latest data science tools and techniques, to remain current with industry trends. (C 4.6)
LO3	Apply data management and version control methodologies to ensure the reproducibility and maintainability of data science projects, while showcasing time management and project planning abilities to successfully deliver data science projects. (C 4.6)
LO4	Apply knowledge of data science, statistics and computing for data validation and analysis to implement software solutions for complex business problems. (C 4.6)
LO5	Analyse complex data sets using statistical methods and training machine learning models in the Python programming language. (C 4.6)
LO6	Analyse and interpret data-driven insights, employing appropriate visualization techniques and visualisation libraries to generate visually compelling and informative representations. (C 4.6)

LO7	Evaluate large amounts of data from various sources using databases, such as SQL and NoSQL database systems, and programming languages, such as Python. (C 4.6)
LO8	Apply appropriate methodologies to conduct independent research to find solutions to the problems in the data science field and communicate the findings with the groups with different levels of expertise. (C 4.6)

#### 4. The Structure of the Programme

The BSc (Hons) Data Science programme is offered as a 3-year full-time programme or in part-time mode over a 4 or 6-year period.

The programme is divided into modules which include both compulsory and elective modules weighing 15 credits each and a thesis weighing 30 credits. All modules in the programme are assigned to one of three levels (L4/L5/L6) which reflect the depth of learning required in the relevant level and year of study.

To achieve a full-honours award, students need to complete modules with a combined weight of 360 credits, including the final thesis.

Table 1: Structure of the Programme

Module Code	Module Name	Level	Credit	Compulsory/ Elective
Year 1				
LIBFOARPDLBDSIDS	Introduction to Data Science	4	15	C
LIBFEXDLBDSIPWP	Introduction to Programming with Python	4	15	C
LIBFEXDLBDSMFC	Mathematics: Analysis	4	15	C
LIBFEXDLBDSPPDS-01	Statistics – Probability and Descriptive Statistics	4	15	C
LIBFPDLBDSOOFPP	Object Oriented and Functional Programming with Python	4	15	C
LIBFOARPDLBDSQDW	Data Quality and Data Wrangling	4	15	C
LIBFEXDLBDSMFLA	Mathematics: Linear Algebra	4	15	C
LIBFEXDLBDSISS	Statistics – Inferential Statistics	4	15	C
Year 2				

LIBFAWDLBCSIAW	Introduction to Academic Work	5	15	C
LIBFEXDLBCSDMDS	Database Modeling and Database Systems	4	15	C
LIBFAWDLBDEDAV	Explorative Data Analysis and Visualization	5	15	C
LIBFAWDLBDSSESSE	Data Science Software Engineering	5	15	C
LIBFWACSDLBDSMLSL	Machine Learning – Supervised Learning	5	15	C
LIBFWACSDLBDSMLUSL	Machine Learning – Unsupervised Learning and Feature Engineering	5	15	C
Elective from Group A			15	E
Elective from Group A			15	E
Year 3				
LIBFWAWADLBDSNNDL	Neural Nets and Deep Learning	6	15	C
LIBFWAREDLBDSSECDSDS	Seminar: Ethical Considerations in Data Science	6	15	C
Elective from Group B			15	E
Elective from Group B			15	E
Elective from Group C			15	E
Elective from Group C			15	E
LIBFBTDLBBT	Bachelor's Thesis	6	30	C

Table 2: List of Electives

Module Code	Module Name	Level	Credit	Subject Area*
Electives A				
LIBFOARPDLBDSMTP	Project: From Model to Production	5	15	n/a
LIBFOPRRPDLBDSPBDM	Project: Build a Data Mart in SQL	5	15	n/a
LIBFOPRRPDLBDSAPM	Agile Project Management	5	15	n/a

LIBFIRPFSINTER1	Internship I <sup>1</sup>	5	15	n/a
LIBFIRPFSINTER2	Internship II <sup>1</sup>	5	15	n/a
<b>Electives B</b>				
LIBFWAWADLBCSEBI1	Business Intelligence	6	15	BI&DA
LIBFWAPRDLBCSEBI2	Project: Business Intelligence	6	15	BI&DA
LIBFWAWADLBDSEAS1	Applied Sales I	6	15	S&M
LIBFWAWADLBDSEAS2	Applied Sales II	6	15	S&M
LIBFWAWADLBDSESCM1	Supply Chain Management I	6	15	SCM
LIBFWAWADLBDSESCM2	Supply Chain Management II	6	15	SCM
LIBFWAWADLBDSDT	Big Data Technologies	6	15	DE&BD
LIBFWAWADLBDSCC	Cloud Computing	6	15	DE&BD
LIBFWAWADLBDSEAIS1	Artificial Intelligence	6	15	AI
LIBFPDLBDSEAIS2	Project: Artificial Intelligence	6	15	AI
LIBFWAWACB	Crypto and Blockchain	5	15	B&F
LIBFWAWAFT	FinTech	5	15	B&F
<b>Electives C</b>				
LIBFWAWAADA	Advanced Data Analysis	6	15	BI&DA
LIBFWAPRPDA	Project: Data Analysis	6	15	BI&DA
LIBFWAWADLBMSM1-01_E	Online Marketing	6	15	S&M
LIBFWAWADLBMSM2-01_E	Social Media Marketing	6	15	S&M
LIBFWAWADLBINGPE_E	Product Development in Industry 4.0	6	15	SCM
LIBFWAPRDLBIEPSPS	Project: Smart Product Solutions	6	15	SCM

<sup>1</sup> Check eligibility before booking the module.

LIBFWAWADE	Data Engineering	6	15	DE&BD
LIBFPPDE	Project: Data Engineering	6	15	DE&BD
LIBFWAWADLBDSEAD1	Self-Driving Vehicles	6	15	AI
LIBFWAREDLDSEAD2	Seminar: Current Topics and Trends in Self-Driving Technology	6	15	AI

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BI&DA = Business Intelligence & Data Analytics	S&M = Sales and Marketing	B&F = Banking & Finance	SCM = Supply Chain Management & Industry 4.0
AI = Artificial Intelligence	D&BI = Data & Business Intelligence	DE&BD = Data Engineering & Big Data Technologies	

## 5. Teaching, Learning and Assessment

Information about teaching, learning and assessment can be found in the Teaching, Learning and Assessment Strategy.

Our programmes are designed to:

- integrate theory with practice,
- develop your ability to critique and challenge models and theoretical frameworks,
- stimulate debate, discussion, and research,
- foster a variety of academic skills,
- be accessible and inclusive,
- develop global citizens.

You are expected to undertake a considerable amount of independent study, including reading, industry-related research, and personal reflection.

### Teaching Formats

You will have access to both asynchronous and synchronous teaching formats.

Via the Course Feed in the virtual learning environment, myCampus, you will be able to contact the module tutor in a flexible and accessible way.

Additionally, Learning Sprints<sup>2</sup> will offer a seven-week intense learning experience in which the lecturers guide students through the learning material in a very structured manner, with

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<sup>2</sup> Offered only when the minimum number of participants is reached.

the goal of successfully preparing them to take the final assessment at the end. During this time, frequent synchronous online meetings are held, offering keynote speeches and interactive tasks.

Both the Intensive Live Sessions and Learning Sprints are recorded to further assist asynchronous learning.

## Learning Resources

You will have access to a wide range of resources, which may include the following:

- myCampus: This Moodle-based central information and digital learning platform is organized based on programmes and modules. On the respective module pages in myCampus, you can access all study materials (e.g., course books (i.e., text books), reading lists, practice exams, and video galleries) as well as the links to all related resources and databases (e.g., MS Teams, links to the library for further reading, contact details of lecturers, links to the booking tool for online exams, and the Turnitin submissions page).
- Learnhub App: You can access your learning materials in a digital app and have all your notes and highlights synchronised. The app supports different learning formats, such as reading and annotating course books using different colour codes, assessing knowledge with interactive self-tests, or watching the latest videos of the current module.
- Our comprehensive online library is aligned with the study content and kept up to date. Compulsory and further reading is mentioned in the course and module descriptions available for the students and aims to provide them with unlimited access.

## Assessment & Feedback

Regulations relating to progression and assessment, including information on late submissions, are as set out in The London Institute of Banking & Finance's General and Academic Regulations for Students.

Assessment strategies follow The London Institute of Banking & Finance's Higher Education Accessible and Inclusive Learning Policy.

Assessment consists of both formative and summative approaches, and feedback and feedforward are provided as outlined in the London Institute of Banking & Finance's Higher Education Assessing Learning & Feedback Policy. The different types of assessment used by the London Institute of Banking & Finance are described in the Higher Education Types of Summative Assessment Guidance.

Module assessment methods are included in Module Handbook which are made available in myCampus.



## 6. Credit and Award

### Credit Framework

The BSc (Hons) Data Science is made up of 360 FHEQ credits. One credit approximates to 10 student effort hours; therefore, the total course requires an average of 3,600 hours effort. Typically, one ECTS credit is the equivalent to two UK credits, although this may vary depending on the individual European state's requirements.

### Award

On successful completion of the full programme, you will be awarded the

Bachelor's Honours Degree	360 credits, of which at least 90 credits must be at Level 6 and 30 credits must be obtained through the Bachelor's Thesis
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### Regulations

The London Institute of Banking & Finance's General and Academic Regulations for Students detail

- regulations governing the award of credit,
- how grades for awards are granted,
- time limits for completion of programmes of study, and
- capping of marks and regulations relating to the resitting of assessment components
- academic misconduct e.g., malpractice, and
- accreditation of prior learning (APL).

### Exit Awards

In line with The London Institute of Banking & Finance's General and Academic Regulations for Students, the following applies:

Bachelor's Degree (non-Honours)	minimum of 300 credits, of which at least 60 credits must be at Level 6
Diploma of Higher Education	minimum of 240 credits, of which at least 90 credits must be at Level 5
Certificate of Higher Education	minimum of 120 credits, of which at least 90 credits must be at Level 4

Note: The London Institute of Banking & Finance does not award interim qualifications. For example, a student registered for the Bachelor's degree will not automatically be awarded a Diploma or Certificate of Higher Education on completion of the required number of credits.

## 7. Professional Recognition

Credits gained via APL into our awards may mean that students will not get certain exemptions from other institutions' higher education or professional awards that recognise our programme.

## 8. Criteria for Admission

All applications will be considered holistically and offers will be based on qualifications, subjects studied, any relevant work experience and personal statements demonstrating a desire to work in the relevant industry.

Students must be able to satisfy the general admissions criteria of The London Institute of Banking & Finance. Entry requirements for all proposed undergraduate programmes are:

- 2 A Levels, and
- GCSE Maths 4 (C in old grading system) or above, and
- GCSE English 4 (C in old grading system) or above, and
- English language competence equivalent to IELTS 6.0 with no less than 5.5 in any element. An online English test is offered (SPEEX) if IELTS not available.

Overseas qualifications may be accepted and will be subject to evidence of equivalency normally verified through ECCTIS (UK ENIC).

If applicants do not satisfy these criteria, they can communicate with the LIBF Admissions Team and discuss entry requirements.

Suitable work experience may be accepted as an alternative on an individual basis.

Mature students who do not meet the entry criteria may be eligible to enrol under the LIBF mature student process. Applicants should contact a member of the Admissions Team if they do not meet the criteria.

## 9. Benchmarks

External:

- QAA UK Quality Code, including:
  - Subject Benchmark Statement for Computing (2022)
  - Level 6 descriptors in the Framework for Higher Education Qualifications in England, Wales and Northern Ireland

- The Frameworks for Higher Education Qualifications of UK Degree Awarding Bodies (FHEQ)

#### Internal:

- The London Institute of Banking & Finance Code of Practice
- The London Institute of Banking & Finance General and Academic Regulations for Students

In addition, research with the relevant sector has been undertaken to ensure that the learning outcomes of the programme addresses identified skills and knowledge gaps.

## 10. Links

Teaching, Learning and Assessment Strategy

[The London Institute of Banking & Finance's General and Academic Regulations for Students](#)

[The London Institute of Banking & Finance's Code of Practice for Quality Assurance, Chapter 3: Accreditation of Prior Learning \(APL\)](#)

Accessible and Inclusive Learning Policy

Types of Summative Assessment

Higher Education Assessing Learning & Feedback Policy

[Subject Benchmark Statement for Computing](#)

[Framework for Higher Education Qualifications in England, Wales and Northern Ireland](#)

[Higher Education Credit Framework for England](#)

### 11. Curriculum Map of Modules against Intended Learning Outcomes of Programme

	Module Code	Module Name	Programme Learning Outcomes							
			LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8
Year 1	LIBFOARPDLBDSIDS	Introduction to Data Science	X	X		X				
	LIBFEXDLBDSIPWP	Introduction to Programming with Python	X	X	X	X	X		X	
	LIBFEXDLBDSMFC	Mathematics: Analysis	X							
	LIBFEXDLBDSSPDS-01	Statistics - Probability and Descriptive Statistics	X	X		X	X			
	LIBFPDLBDSOOFPP	Object Oriented and Functional Programming with Python	X		X	X	X		X	
	LIBFOARPDLBDSQDW	Data Quality and Data Wrangling	X	X	X	X		X	X	
	LIBFEXDLBDSMFLA	Mathematics: Linear Algebra	X							
	LIBFEXDLBDSSIS	Statistics - Inferential Statistics	X	X		X	X			
Year 2	LIBFAWDLBCSIAW	Introduction to Academic Work		X						X
	LIBFEXDLBCSDMDS	Database Modeling and Database Systems	X	X	X	X			X	
	LIBFAWDLBDEDAV	Explorative Data Analysis and Visualization		X		X	X	X	X	X
	LIBFAWDLBDSSESSE	Data Science Software Engineering	X	X	X	X			X	X
	LIBFWACSDLBDSMLSL	Machine Learning - Supervised Learning		X		X	X			X
	LIBFWACSDLBDSMLUSL	Machine Learning - Unsupervised Learning and Feature Engineering		X		X	X			X
	Elective from Group A									
Elective from Group A										

<b>Year 3</b>	LIBFWAWADLBDSNNDL	Neural Nets and Deep Learning		X		X	X			
	LIBFWAREDLBDSSECDL	Seminar: Ethical Considerations in Data Science		X	X					X
	Elective from Group B									
	Elective from Group B									
	Elective from Group C									
	Elective from Group C									
	LIBFBTDLBBT	Bachelor's Thesis			X	X	X	X	X	X

This table shows the distribution of the programme's learning outcomes (as specified in the programme specification) across the course modules.

## 12. Mapping of Teaching Formats and Types of Media used in the Programme Modules

	Module Code	Module Name	Type of Assessment <sup>1</sup>	Teaching Formats <sup>2</sup>			Types of Media <sup>3</sup>					
				CF	ILSE	LS <sup>4</sup>	CB	RL	OT	RB	V	PE
Year 1	LIBFOARPDLBDSIDS	Introduction to Data Science	OARP	X	X	X	X	X	X		X	
	LIBFEXDLBDSIPWP	Introduction to Programming with Python	EX	X	X	X	X	X	X		X	X
	LIBFEXDLBDSMFC	Mathematics: Analysis	EX	X	X	X	X	X	X	X	X	X
	LIBFEXDLBDSSPDS-01	Statistics - Probability and Descriptive Statistics	EX	X	X	X	X	X	X	X	X	X
	LIBFPDLBDSOOFPP	Object Oriented and Functional Programming with Python	P	X	X	X						
	LIBFOARPDLBDSQDW	Data Quality and Data Wrangling	OARP	X	X	X	X	X	X		X	
	LIBFEXDLBDSMFLA	Mathematics: Linear Algebra	EX	X	X	X	X	X	X	X	X	X
	LIBFEXDLBDSSIS	Statistics - Inferential Statistics	EX	X	X	X	X	X	X	X	X	X
Year 2	LIBFAWDLBCSIAW	Introduction to Academic Work	AW	X	X	X	X	X	X		X	
	LIBFEXDLBCSDMDS	Database Modeling and Database Systems	EX	X	X	X	X	X	X		X	X

	LIBFAWDLBDSSEDAV	Explorative Data Analysis and Visualization	AW	X	X	X	X	X	X		X	
	LIBFAWDLBDSSESSE	Data Science Software Engineering	AW	X	X	X	X	X	X		X	
	LIBFWACSDLBDSMLSL	Machine Learning - Supervised Learning	WACS	X	X	X	X	X	X		X	
	LIBFWACSDLBDSMLUSL	Machine Learning - Unsupervised Learning and Feature Engineering	WACS	X	X	X	X	X	X		X	
	Elective from Group A											
	Elective from Group A											
Year 3	LIBFWAWADLBDSNNDL	Neural Nets and Deep Learning	WAWA	X	X	X	X	X	X		X	
	LIBFWAREDLBDSSECDL	Seminar: Ethical Considerations in Data Science	WARE	X	X	X						
	Elective from Group B											
	Elective from Group B											
	Elective from Group C											
	Elective from Group C											
	LIBFBTDLBBT	Bachelor's Thesis	BT									
This table shows the distribution of teaching formats and types of media used in the programme modules												
<sup>1</sup> EX = Exam, WAWA = Written assignment, WACS = Case study, WARE = Research essay, WAPR = Project report, P = Portfolio, AW = Advanced Workbook, OARP = Oral Assignment + Reflection Paper, OPRRP = Oral Project Report + Reflection Paper, BT/MT = Bachelor's / Master Thesis												

<sup>2</sup>CF = Course Feed, ILSE = Intensive Live Sessions, LS = Learning Sprints

<sup>3</sup>CB = Course Book, RL = Reading List, OT = Online Tests, RB = Review Book, V = Videos, PE = Practice Exams

<sup>4</sup>Offered only when the minimum number of participants is reached.