BIRKBECK, UNIVERSITY OF LONDON

BSc (Hons) Data Science and Computing

PROGRAMME BOOKLET
(2020/2021)

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Version of September 30, 2020

Table of Contents

1 GENERAL INFORMATION

1.1 Welcome
Welcome to all students of the **BSc Data Science and Computing (DSC)**. The Programme Director is Dr David Weston (dweston@dcs.bbk.ac.uk). David is a member of the Department of Computer Science and Information Systems which is located in the Main Building of Birkbeck College. The department is part of the School of Business, Economics and Informatics. The Programme Administrator is Matt Spence (bsc@dcs.bbk.ac.uk).

1.2 Enrolment
Enrolment can be carried out online at www.bbk.ac.uk/mybirkbeck. It is necessary to have a username and a password issued by IT Services. Enrolment should be carried out no later than **23rd September 2020**, or within two weeks of notification from the Registry that you are eligible to enrol.

1.3 Fees/Finance
Fees may be paid by direct debit in instalments and this is probably the best method to adopt. Additional expenses will be incurred and in particular it is important to budget for the purchase of books. An amount of £300 - £350 per year is normal. The College may be able provide financial support. Please see http://www.bbk.ac.uk/mybirkbeck/finance/studentfinance

1.4 Change of Address
If during the year you change your address from your enrolment address, please make sure you inform both the Registry and the Programme Administrator in the DCSIS. Failure to inform the Programme Administrator will mean that you may miss important information concerning the programme and the examinations.

1.5 Workloads
Please note that you are expected to work hard for your degree. As a minimum you are expected to devote at least as much time outside classes as in classes, i.e., 9 or 10 hours extra a week for the part time programme and 12 or 13 hours extra for the full time programme. Poor attendance at classes and too little study outside the classes usually lead to failure.

1.6 Opening Hours
The College Main Building, the DCSIS laboratories and the ITS workstation rooms are open from 7.00 am to midnight.

1.7 First Day of Attendance
The autumn term starts the week beginning **Monday 4 October 2020**. There will be an induction evening, including a laboratory induction, for first year students on **Thursday 1st October 2020**.

1.8 International Students
International students (i.e., not home students and not EU students) must notify the BSc Administrator of any absences, including holidays, and any return, temporary or permanent, to their country of origin. This information will be passed to the UK Border Agency.

1.9 Moodle

Information about most modules can be found on the Moodle virtual learning environment. The login page is http://moodle.bbk.ac.uk/. Further information about Moodle can be obtained from this page.

1.10 Coursework Deadlines

For each coursework assignment you are set, you will be issued with a deadline. To achieve full marks for the assignments, you must submit by the assignment deadline.

Coursework that is submitted up to seven calendar days late will receive a late penalty mark and deduction of 10% of marks. However, this deduction will not take the mark for the late piece of assessment lower than the 40% pass threshold.

Any work that is submitted between seven and fourteen calendar days late will receive a late capped penalty mark of 40%.

Work submitted more than fourteen calendar days from the deadline will be awarded a grade of 0%.

Deadlines are published by module tutors in Moodle and publicised in class. If you are not sure about your deadlines for coursework assignment, please speak to your module tutor at the earliest possible opportunity.

1.11 Feedback on Assessment

Feedback on coursework is normally provided within four weeks of the deadline for submission of the piece of work in question. If a piece of work is submitted after the normal deadline then it may not be possible to provide feedback within four weeks. Feedback on end of year examinations, beyond the confirmed mark, is not normally provided.

1.12 Catch up Tests

For some modules students who miss a test or fail a test are offered a catch up test for which the mark is capped at 40% in the absence of an accepted claim for mitigation.

1.13 Mitigating Circumstances

Mitigating circumstances are circumstances that are outside a student's control and that significantly disrupt performance in an assessment. Examples are sudden illness and the death of a close relative. Any claim for mitigation should be submitted *within two weeks* after the assessment date or assessment deadline. Documentary evidence is required. Full details, including a claim form, are at www.bbk.ac.uk/registry/policies/documents under the two headings mitigating-circumstances and mit-circs-form.

1.14 Common Award Scheme

The regulations for Birkbeck degree programmes can be found at http://www.bbk.ac.uk/registry/policies/

It is useful to know the definitions of "retake" and "reassessment". If a failed module is retaken, then it is necessary to attend the lectures and to carry out all components of the assessment, even those components that were passed in a previous attempt. If a failed module is reassessed, then it is not necessary to attend the lectures and it is only necessary to carry out those

components of the assessment that were failed. There is a cap at 40% on the mark for any component carried out in the reassessment, unless mitigating circumstances have been accepted. The marks for a retake are not capped. A student offered a reassessment may choose instead to retake the module in question.

1.15 Retakes and Reassessments

Entry Year from 2019/20 and onwards: if a module is failed at the first attempt in 2020/21, then there will be an automatic reassessment in August or September 2021. This reassessment will count as a second attempt. At most four attempts at passing a module are allowed.

Entry Year 2018/19 or earlier: if a module is failed at the first attempt with a mark in the range 30% to 39% inclusive then a reassessment is permitted. If the mark is 29% or less, then a retake is required. At most three attempts at passing a module are allowed.

A student who is required to retake a module in 2021/22, and for whom 2021/22 is not the final year of study, can only register for at most 60 credits part time or at most 90 credits full time in 2021/22, including the credits for any modules that are retaken.

2 TIMETABLE: PART TIME AND FULL TIME

Dates of term
- Autumn term: 5 October 2020 -18 December 2020.
- Spring term: 11 January 2021 - 26 March 2021.
- Summer term: 26 April 2021 - 9 July 2021.

Credits

Students must obtain at least 360 credits of which at least 120 credits must be at level 6. The total value of the modules taken in a single year should not exceed 120 credits. In this timetable, modules which are taught in a single term have a value of 15 credits. Modules which are taught over two terms have a value of 30 credits.

Final year project

The final year project, which is compulsory but not timetabled, is level 6 and has a value of 30 credits. There are two types of project: 1) Data Science Systems Development; and 2) Data Science Research.

Optional modules

The optional modules are displayed in three tables, one for each of the autumn, spring and summer terms.

ITApps modules

The ITApps modules are shown with an asterisk.

Lecture Rooms

Information about rooms can be found in MyBirkbeck. You are advised to check before each lecture because room bookings can change at short notice.

2.1 Part Time

All modules shown below are taught from 6.00-9.00pm, unless indicated otherwise.

Part time Year 1, Autumn Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon	Mathematics for Computing	Paul Newman, Oded Lachish	None	4
Tue	Introduction to Programming	Tingting Han	None	4
Wed	Introduction to Database Technology	Martin O'Shea	None	4
Thu				
Fri				

Part time Year 1, Spring Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon	System Analysis and Design I	Taolue Chen	None	4
Tue	Introduction to Computer Systems	Keith Mannock	None	4
Wed	Foundations of Data Science I	Felix Reidl	ITP	4
Thu				
Fri				

Part time Year 2, Autumn Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon				
Tue				
Wed	Foundations of Data Science II	Paul Yoo	FDSI	5
Thu	Software Engineering I	Taolue Chen	SADI	5
Fri	Data Structures and Algorithms	Igor Razgon	ITP or SP1	5

Part time Year 2, Spring Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon	Introduction to Web Authoring	Various	None	4
Tue				
Wed	System Analysis and Design II	Andrea Cali	SADI	5
Thu	Software and Programming I	Roman Kontchakov	ITP	5
Fri				

Part time Year 3, Autumn Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon	Information Security	Igor Razgon	None	6
Tues	Introduction to Data Analytics using R	Cen Wan	None	6
Wed				
Thu				
Fri				

Part time Year 3, Spring Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon	Database Management	Peter Wood	SADI, SADII, ITP, ICS	6
Tue	Software Engineering II	Jan Hidders	SE I	6
Wed				
Thu				
Fri	Computer Networking	Andrea Cali	None	5

Students must select 15 credits of optional modules.

Part time Year 4, Autumn Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon				
Tue	Professional Issues in Computing	Brian Gannon	None	6
Wed				
Thu				
Fri				

Part time Year 4, Spring Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon				
Tues				
Wed	Data Science Applications and Techniques	Alessandro Provetti		6
Thu	Concepts of Machine Learning	George Magoulas	FDSII	6
Fri				

Students must select 15 credits of optional modules. Students will also complete a 30 credit project.

Year 3 and Year 4, Part Time, Autumn Term, optional modules

Day	Module	Lecturers	Prerequisites	Level
Mon	Calculus 2 (Department of Economics, Mathematics and Statistics. The second half of this 30 credit module runs in the spring term)	Department of Economics, Mathematics and Statistics	A-Level Mathematics	5
Mon	Introduction to Semantic Technologies **(daytime teaching 14:00-17:00)**	Michael Zakharyaschev	None	6
Mon	JavaScript	Various	IWA, PSP	5
Mon	Mobile Application Development	Various	IWA, JavaScript	5
Mon	Wireless and Mobile Computing	George Roussos	SP1, SP2, CN, IS recommended	6
Wed	Programming Language Paradigms	Keith Mannock	SP2	6
Wed	Software and Programming II	Carsten Fuhs	SP1	6
Thu	E-business	George Roussos	None	5

Year 3 and Year 4, Part Time, Spring Term, optional modules

Day	Module	Lecturers	Prerequisites	Level
Mon	Calculus 2 (Department of Economics, Mathematics and Statistics. The first half of this 30 credit module runs in the autumn term)	Department of Economics, Mathematics and Statistics	A-Level Mathematics	5
Mon	Web Data with XML, JSON and AJAX	Various	IWA, JV	5
Tue	Mobile Application Development	Various	IWA, JavaScript	5

Thu	Software and Programming III	Keith Mannock	SP2, primer course	6
Thu	JavaScript		IWA, PSP	5
Fri	Cloud Computing Concepts	Stelios Sotiriadis	SP2	6

2.2 Full Time

Full time Year 1, Autumn Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon	Mathematics for Computing **(daytime teaching 14:00-17:00)**	Andy Purkiss, Oded Lachish	None	4
Tue	Introduction to Programming **(daytime teaching 14:00-17:00)**	Tingting Han	None	4
Wed	Introduction to Database Technology	Martin O'Shea	None	4
Thu	Introduction to Web Authoring	Various	None	4
Fri				

Full time Year 1, Spring Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon				
Tue	Introduction to Computer Systems	Keith Mannock	None	4
Wed	Foundations of Data Science I	Felix Reidl	ITP	4
Thu	Software and Programming I **(daytime teaching 14:00-17:00)**	Roman Kontchakov	ITP	5
Fri	System Analysis and Design I **(daytime teaching 14:00-17:00)**	Felix Reidl	None	4

Full time Year 2, Autumn Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon				
Tue	Professional Issues in Computing	Brian Gannon	None	6
Wed	Foundations of Data Science II	Paul Yoo	FDSI	5
Thu	Software Engineering I	Taolue Chen	SADI	5
Fri	Data Structures and Algorithms	Igor Razgon	ITP or SP1	5

Full time Year 2, Spring Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon				
Tue	Software Engineering II	Jan Hidders	SE I	6
Wed	System Analysis and Design II	Andrea Cali	SADI	5
Thu				
Fri	Computer Networking	Andrea Cali	None	5

Students must select 15 credits of optional modules.

Full time Year 3, Autumn Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon	Information Security	Igor Razgon	None	6
Tue	Introduction to Data Analytics using R	Cen Wan	None	6
Wed				
Thu				
Fri				

Full time Year 3, Spring Term, compulsory modules

Day	Module	Lecturers	Prerequisites	Level
Mon	Database Management	Peter Wood	SADI, SADII, ITP, ICS	6
Tue				
Wed	Data Science Applications and Techniques	Alessandro Provetti		6
Thu	Concepts of Machine Learning	George Magoulas	FDSII	6
Fri				

Students must select 15 credits of optional modules. Students will also complete a 30 credit project.

Full Time, Autumn Term, optional modules

Day	Module	Lecturers	Prerequisites	Level
Mon	Calculus 2 (Department of Economics, Mathematics and Statistics. The second half of this 30 credit module runs in the spring term)	Department of Economics, Mathematics and Statistics	A-Level Mathematics	5
Mon	Introduction to Semantic Technologies **(daytime teaching 14:00-17:00)**	Michael Zakharyaschev	None	6
Mon	JavaScript	Various	IWA, PSP	5
Mon	Mobile Application Development	Various	IWA, JavaScript	5
Mon	Wireless and Mobile Computing	George Roussos	SP1, SP2, CN, IS recommended	6
Wed	Programming Language Paradigms	Keith Mannock	SP2	6
Wed	Software and Programming II	Carsten Fuhs	SP1	6
Thu	E-business	George Roussos	None	5

Full Time, Spring Term, optional modules

Day	Module	Lecturers	Prerequisites	Level
Mon	Calculus 2 (Department of Economics, Mathematics and Statistics. The first half of this 30 credit module runs in the autumn term)	Department of Economics, Mathematics and Statistics	A-Level Mathematics	5
Mon	Web Data with XML, JSON and AJAX	Various	IWA, JV	5

Tue	Mobile Application Development	Various	IWA, JavaScript	5
Tue	Software and Programming III **(daytime teaching 13:30-17:00)**	Keith Mannock	SP2, primer course	6
Tue	Advanced Web Authoring	Various	IWA	5
Thu	Software and Programming III	Keith Mannock	SP2, primer course	6
Thu	JavaScript		IWA, PSP	5
Fri	Cloud Computing Concepts	Stelios Sotiriadis	SP2	6

3 COMPULSORY MODULES

The summaries of all the compulsory modules are given below. The information in the module summaries may change. In particular, you are advised **not** to purchase books until after the first meeting of any particular module. Confirmation of the recommended books should be provided in the first meeting.

Computer Networking   Level 5
15 credits
BUCI036H5

Lecturer: Andrea Cali

Outline
The module covers several fundamental aspects of modern computer networks, especially the Internet and its protocols. Foundations are given for networking at all layers, from the physical layer to applications, and the course topics are presented together with their real-world applications.

Aims
The module aims at providing the student the tools for understanding and building network applications, by analysing Internet protocols, the interaction among them, and their applications. There is an emphasis on real-world applications, so as to provide the basic tools to understand and design network hardware and software.

On successful completion of this module the student will be able to:
- Understand the fundamental network protocols and interfaces at any network layer
- Know basic design and performance issues in computer networks
- Write simple Java networking code with sockets

Syllabus
- Computer Networks and their applications
- The physical layer
- The data link layer, LAN and WAN
- The network layer and IP

- The transport layer and TCP
- The application layer, DNS, email, and FTP
- Network security and cryptography

Assessment: A two-hour written examination (80%) and programming coursework (10%).

Recommended reading
Andrew Tanenbaum, Computer Networks (fourth edition), Prentice Hall, Upper Saddle River, NJ, 2003, ISBN 0-13-038488-7. http://www.phptr.com/tanenbaumcn4/

Optional reading
Douglas Comer, Computer Networks and Internets with Internet Applications (fourth edition), Prentice Hall, Upper Saddle River, NJ, 2004, ISBN 0-13-143351-2.
http://netbook.cs.purdue.edu

Concepts of Machine Learning   Level 6
15 credits

Short name: CML
BUCI034H6

Module leader: George Magoulas
Lecturer(s): George Magoulas
Online material: https://moodle.bbk.ac.uk/course/view.php?id=16450
Module outline
Using a combination of lectures and lab work, the module covers bio-inspired machine learning paradigms giving students knowledge of advanced features of various methods at the theoretical and practical levels. This is an MSc level module which is also offered to undergraduate students.

Aims
The module covers computational algorithms for learning from data, data-driven decision making and complex problem solving. It provides an introduction to machine learning methods, such as neural networks, fuzzy logic, fuzzy clustering, bio-inspired computing, and covers basic concepts of feature selection and generalisation.

Learning Outcomes
- Discuss essential facts, concepts, principles and theories of machine learning.
- Discuss fundamental issues relating to the design and implementation of systems that employ machine learning
- Apply theoretical understanding of machine learning paradigms to solve data modelling, classification and decision making problems.
- Recognise social, ethical & professional issues and risk involved in the application and use of machine learning methods.
- Recognise and analyse specifications appropriate to specific problems and plan strategies for their solution.
- Describe the process involved in the effective deployment of machine learning.

- Evaluate machine learning methods in terms of general quality attributes and possible trade-offs presented within the given problem.

Syllabus
- Learning from data
- Feature selection and generalisation
- Supervised and unsupervised learning methods, and clustering as an unsupervised learning problem
- Fuzzy logic and fuzzy clustering
- Deep networks: architectures and learning algorithms
- Natural computing: genetic algorithms, evolutionary algorithms, evolution strategies, swarm intelligence
- Advanced learning and evolution schemes: ensembles, boosting, hybrid algorithms, neuro-evolution

Prerequisites
No specific module is pre- or co-requisite but knowledge of calculus and linear algebra is essential as the module uses mathematical concepts, such as vector, matrices and their operations, functions and graphs, gradient, derivative. The module also uses trigonometry concepts, statistical concepts and the notion of probability, data structures, first-order and second-order optimisation methods and general algorithmic concepts. MATLAB and Python are used in the labs.

Timetable
All dates and timetables are listed in the programme handbooks of individual programmes.

Assessment
Two-hour written examination (100%)

Data Science Applications and Techniques   Level 6
15 credits

Short name: DSAT
BUCI071H6

Module leader: Alessandro Provetti
Lecturer(s): Alessandro Provetti

Data Structures and Algorithms   Level 5
15 credits
BUCI030H5

Short name: DSA
Lecturer: Igor Razgon

Prerequisites: Introduction to Programming or Software and Programming 1.

Aims
Data Structures and Algorithms are fundamental to programming and to understanding computation. The aim of this module is to provide students with a coherent introduction to

techniques for using data structures and some basic algorithms. Teaching and learning methods include lectures and reading materials describing techniques for analysing algorithms and applications of data structures. Students will have an opportunity to examine practical problem solving for this area.

Syllabus

- Introduction to Data Structures and Algorithms;
- Data structures: arrays, lists, queues, stacks, and sets;
- Trees: binary trees;
- Recursion - Traversing binary trees;
- Dictionary based data structures: binary search trees, hash tables, maps;
- Analysis of running time of algorithms;
- Algorithms for sorting and searching;
- Elementary tree and graph algorithms: depth first and breadth first search;
- Finite state machines (automata) and regular languages;
- Turing machines.

Assessment: two hour written examination (80%) and coursework (20%).

Database Management   Level 6
15 credits
COIY028H6

Short name: DM
Lecturer: Peter Wood

Prerequisites: ISC, ISM, ITP and ICS

Aims
To familiarise the student with the main concepts underlying Database Management, and in particular with the Relational Database model which is the dominant database system used within corporate IT departments. The course has three main strands: (1) Fundamental concepts introduced using the Entity-Relationship model, (2) Querying a relational database, and (3) Relational database design.

Syllabus
- Entity Relationship Diagrams
- Relational Model
- Querying a Relational Database
- Creating Relational Schemas
- Modifying a Relational Database
- Integrity Constraints in the Relational Model
- Relational Database Design
- Normal Forms
- Normalisation Algorithms
- Object Relational Databases
- Databases and the Web

Assessment
2-hour written examination and practical coursework, weighting 80% and 20% respectively.

Reading list
J.D. Ullman and J. Widom, A First Course in Database Systems. Third edition, Prentice Hall, 2008.
A.B. Silberschatz, H.F. Korth and S. Sudarshan, Database System Concepts. Sixth edition, McGraw-Hill, 2011.
T. Connolly and C. Begg, Database Systems: a practical approach to design, implementation and management. Fifth edition, Addison Wesley, 2010.

Foundation of Data Science I   Level 4

15 credits
BUCI069H4

Short name: FDSI
Lecturer: Felix Reidl

Module outline
This module covers fundamental aspects of data science and analytics. Students develop the basic mathematical knowledge and skills needed for further studies in the BSc Data Science programme, and needed by data scientists/analysts in general. These include basic elements of linear algebra, preliminaries for calculus, as well as discrete probability theory and fundamentals of statistics. The module will show you how to use the popular and powerful language Python to solve computational tasks from these mathematical subjects. In particular, this module will get you acquainted with popular Python libraries and packages for programming to solve problems arising from linear algebra, probability theory and statistics.

Aims
On successful completion of this module, you will:

- Demonstrate satisfactory knowledge of basic linear algebra and matrix theory.
- Demonstrate satisfactory knowledge of basic discrete probability theory and statistics.
- Demonstrate satisfactory knowledge of relevant Python libraries and packages.
- Demonstrate satisfactory skills of programming in Python to solve computational tasks from linear algebra and discrete probability theory.
- Understand the link between the basic knowledge acquired from the module and data science/analytics applications.

Assessment
Coursework (20%) One two hour written examination (80%).

Foundation of Data Science II   Level 5
15 credits

Short name: FDSII
Lecturer: Paul Yoo

Module outline
This module covers further fundamental aspects of data science and analytics. It is a direct continuation of Foundations of Data Science I. Apart from consolidating the knowledge they acquired from FDS I, students develop further mathematical knowledge and skills needed for studies in the BSc Data Science programme, and needed by data scientists/analysts in general. These include basic elements of calculus, further topics in linear algebra, as well as continuous probability theory and further statistics. The module will show you how to use the popular and powerful language Python to solve computational tasks from these mathematical subjects. In particular, this module will get you acquainted with popular Python libraries and packages for programming to solve problems arising from calculus, probability theory and statistics.

Aims
On successful completion of this module a student will be expected to be able to:
- Demonstrate satisfactory knowledge of basic calculus.
- Demonstrate satisfactory knowledge of further linear algebra and matrix theory.
- Demonstrate satisfactory knowledge of continuous probability theory and statistics
- Demonstrate satisfactory knowledge of relevant Python libraries and packages
- Demonstrate satisfactory skills of programming in Python to solve computational tasks from calculus, linear algebra, continuous probability theory and statistics.
- Understand the link between the basic knowledge acquired from the module and data science/analytics applications

Assessment
Coursework (20%) One two hour written examination (80%).

Information Security   Level 6
15 credits
COIY045H6

Lecturer: Igor Razgon

Aims
Information security is about protecting information (and information systems) against unauthorised access and tampering. Avoiding security breaches has a high priority for organisations storing and handling confidential data. This module provides students with an introduction to information security. This covers technical aspects, such as cryptography, but also extends to management aspects, such as security policies, as having the technical infrastructure in place is only part of the solution. Students will learn how to employ technical solutions effectively in an organisation-wide context.

Syllabus
- Overview of Information Security
- Access Control Matrix Model
- Security Policies
- Social Engineering

- Basic Cryptography
- Identity Management
- Access Control Mechanisms
- Confinement
- Assurance and Trust
- Network Intruders and Intrusion Detection
- Firewalls and Malicious Software
- Cryptographic Protocol Concepts

Prerequisites
None

Assessment
Two-hour written examination (80%) and practical coursework (20%).

Recommended Reading
- William Stallings, Cryptography and Network Security 5th edition, Pearson, 2010, ISBN 0136097049
- Matt Bishop, Computer Security: Art and Science, Addison-Wesley, 2002, ISBN 0201440997
- Ross Anderson, Security Engineering 2nd edition, John Wiley & Sons, 2008, ISBN 0470068523
- Bruce Schneier, Applied Cryptography, John Wiley & Sons, 1996, ISBN 0-471-11709-9

Introduction to Computer Systems   Level 4
BUCI008H4
15 credits

Lecturer: Keith Mannock

Syllabus
- history of computing
- number representations
- Boolean algebra
- data storage
- structure of a computer
- file management
- algorithms
- relational databases

Prerequisites: None
Assessment: One two-hour written examination (80%) and an in-class test (20%)

Recommended Reading
Brookshear, J.G. (2011), Computer Science: an overview, 11th edition, Addison Wesley

Introduction to Data Analytics using R   Level 6
BUCI045H6

15 credits
Short name: IDA

Module leader: Cen Wan

Online material: https://moodle.bbk.ac.uk/course/view.php?id=16458

Module outline
This module covers the principle concepts and techniques of data analytics and how to apply them to large-scale data sets. Students develop the core skills and expertise needed by data scientists, including the use of techniques such as linear regression, classification and clustering. The module will show you how to use the popular and powerful data analysis language and environment R to solve practical problems based on use cases extracted from real domains.

Aims
To study advanced aspects of big data analytics, applying appropriate machine learning techniques to analyse big data sets, assessing the statistical significance of data mining results, and using the open-source tool R to perform basic data mining tasks on big data.

Syllabus
Introduction to big data analytics: big data overview, data pre-processing, concepts of supervised and unsupervised learning.
Basic statistics: mean, median, standard deviation, variance, correlation, covariance.
Linear regression: simple linear regression, introduction to multiple linear regression.
Classification: logistic regression, decision trees, SVM.
Ensemble methods: bagging, random forests, boosting.
Clustering: K-means, K-medoids, Hierarchical clustering, X-means.
Evaluation and validation: cross-validation, assessing the statistical significance of data mining results.
Selection of advanced topics such as: scalable machine learning, big data related techniques, mining stream data, social networks.
Tools: R.

Prerequisites
Experience with a modern programming language.

Coursework
Several pieces practical exercises involving learning and mining big data sets using the tool R.

Assessment
Coursework (20%). Examination (80%).

Recommended reading
An Introduction to Statistical Learning: With Applications in R: Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani.

Introduction to Programming   Level 4
BUCI007H4
15 Credits

Short name: ITP
Lecturer: Tingting Han

Syllabus
- context of Java
- integrated development environment
- variables
- number types
- arithmetic and Boolean operations
- if and switch statements
- loops
- methods
- arrays
- examples of algorithms

Prerequisites
None

Assessment
One two-hour written examination (70%) and an in-laboratory test (30%)

Recommended Reading
Cay S. Horstmann Java for Everyone: compatible with Java 5, 6, and 7, Wiley, 2011.

Introduction to Web Authoring   Level 4
SSCS004H4
15 credits
Module leader: Gordon McIntyre
Lecturer(s): Tobi Brodie, Chris Maigler, John MacNabb, Aris Markogiannakis, Margarita Razgon

Aims

- to design and build a website for a case study small business or optionally for an organisation of the students' choice
- to validate a website so that it complies with current web standards (HTML5 and CSS3)
- to publish a website online
- to encourage students to acquire self-study skills so they can keep up in the context of rapidly-changing technologies, tools, techniques and methods.

Syllabus

- Web Page Authoring: Web page authoring using web standards for HTML5 and CSS3. Browser differences. Validators.
- Web Design: Colour theory. Layout and typography. Accessibility. Storyboarding. Sitemap. Planning website architecture.
- Web Publishing: FTP File Transfer Protocol
- Legal issues: Copyright and IPR

Prerequisites

- Basic PC and internet skills.
- File compression tools (compress files, extract compressed files using WinZip)
- Folder and file management (create, rename and organise folders, recognise filetypes from their file extension, change folder options)
- Searching the web using a browser (save a web page, view a page source, open local files, adding to favourites, change browser settings, use History menu, download resources)

Mathematics for Computing   Level 4
COIY040H4
15 credits

Lecturer: Oded Lachish, Paul Newman

Outline
This module covers the fundamentals of mathematics commonly applied to computing. It aims to introduce the basic elements of discrete mathematics that provide a foundation for the understanding of algorithms and data structures used in computer science.

Aims
On successful completion of this course you will: -
- Be competent with the basic elements of discrete mathematics
- Be familiar with algorithms
- Have an understanding of the data structures used in computer science

Prerequisites
Mathematical methods or equivalent

Assessment
Coursework (30%)
One two hour written examination (70%).

Recommended Reading
Lipshutz, S, Schaum's Outline Essential Computer Mathematics

Project (BSc Data Science) Level 6
Type 3: BUCIO26S6
Type 4: BUCIO27S6

Projects Coordinator: Oded Lachish

The project must be taken in the fourth year. There are two types of project, labelled 3 and 4. For further information, see the project briefing document on the departmental intranet at https://www.dcs.bbk.ac.uk/intranet/index.php/BSc_Student_Projects.

Recommended reading
C.W. Dawson, Projects in Computing and Information Systems: a students guide. Pearson Education Limited, 2nd edition (2009).

Professional Issues in Computing Level 6
COIY030H6

Short name: SOIC
Lecturer: Brian Gannon

Aims
This module aims to raise awareness about social implications, rights and duties related to actions we take in our role as computer scientists. This will be achieved by a combination of lectures and seminars given by students.

Syllabus
- A brief history of commercial computing
- The role of IS in everyday life
- Data Protection
- Freedom of Information
- Intellectual Property
- Computer Misuse
- Software Contracts
- Information Services and the Law (defective software)
- Employment and Career Development
- E-commerce

Coursework
Essay, Presentation

Assessment
Examination (80%), Essay (10%), Presentation (10%)

Recommended Reading
Frank Bott: Professional Issues in Information Technology. BCS. 2005.

Software and Programming I   Level 5
COIY018H5
Short name: SP1

Lecturer: Roman Kontchakov

Aims
On successful completion of this module, students should be able to understand and explain basic procedural and object-oriented features of the Java programming language. In addition, they will be able to edit, compile and run small Java programs using the BlueJ integrated development environment.

Syllabus
- review of primitive data types and arrays
- branching and loops
- objects and classes
- methods and constructors
- instance and static variables and methods
- public and private access
- inheritance and polymorphism
- exception handling
- strings and input/output
- basic data structures and algorithms

Prerequisites
None. However, a general familiarity with computer programming is assumed and successful completion of the module Introduction to Programming would be advantageous.

Assessment
Two in-class tests (25%) and Examination (75%)

Reading list
Horstmann, C (2010): Java for Everyone. Wiley. ISBN 978-0-471-79191-1

System Analysis and Design I   Level 4
COIY016H4
Short name: SADI

Lecturer: Felix Reidl

Outline
The goal of this module is to introduce the basic concepts of information systems and basic techniques for systems analysis and design.

Aims

On completion of this course a sound student will have a preliminary understanding of object oriented technology; know a process through which information systems are developed; be able to build requirements models for information systems using UML 2.

Syllabus
- What Are Information Systems
- Problems in Information Systems Development
- Avoiding the Problems
- What Is Object-Orientation
- Modelling Concepts
- Requirements Capture
- Requirements Analysis
- Refining the Requirements Model
- Object Interaction
- Specifying Operations
- System Design
- Human Computer Interaction
- Software Development Methodologies

Prerequisites: None

Coursework
Two in-class tests and one group project.

Assessment
Coursework (20%) and Examination (80%).

Recommended Reading
Bennet S, McRobb S & Farmer R (2010): Object-Oriented Systems Analysis and Design using UML, 4/e, McGraw-Hill. ISBN 0077125363

System Analysis and Design II   Level 5
COIY019H5

Short name: SADII
Lecturer: Andrea Cali

Description
This module aims at providing a wide range of tools for information system management and design, including object-oriented design principles, database design, architecture design and project management techniques.

Aims and Objectives
On successful completion of this module a student will be expected to:
- have knowledge and understanding of object oriented design, database design, architecture design and project management
- model and design classes for object-oriented computer based systems

- develop strategies for solving design problems
- carry out a requirements analysis
- evaluate projects in terms of cost and benefits
- manage a project in its various phases
- apply several software development processes, according to the requirements
- design and manage data in an information system
- understand and design architectures in information systems
- have acquired skills in reporting, analysis and problem solving
- have knowledge and understanding of commercial and economic issues

Prerequisites
Systems Analysis and Design I

Assessment: coursework (20%) in the form of in-class tests, examination (80%).

Recommended reading
Bennet S, McRobb S & Farmer R (2010): Object-Oriented Systems Analysis and Design using UML, 4/e, McGraw-Hill. ISBN 9780077125363..

Software Engineering I   Level 5

BUCI066H5

Short name: SE1
Lecturer: Taolue Chen

Aims
Software Engineering I is designed to:

- Provide an introduction to software engineering as a professional discipline.
- Provide insight and understanding of the context and constraints within which software is developed.
- Provide a clear understanding of processes, methods, activities, tools and techniques involved in professional software engineering.
- Equip students with the theory, tools and techniques for professional software development and software project management.
- Provide students with the opportunity to participate in practical software engineering tasks.
- Empower students to be able to develop software in a systematic, structured rigorous, safe and secure manner.

Learning Outcomes
On successful completion of this module a student will be expected to be able to:

- Understand the role of software engineering and its importance in software development. Understand the main reasons for success and failure in software development.

- Explain issues of professionalism related to Software Engineering. Understand the social, ethical and legal context in which software engineers work.
- Enumerate the main software development process models, specifically plan based and Agile models, and explain the applicability of these models to the development of different software types.
- Evidence a thorough understanding of software process model activities, including analysis and design, implementation, testing and software deployment. Undertake core software development activities in a structured, competent and professional manner, using industry standard techniques.
- Explain how software is tested to ensure quality. Devise a test plan that includes elements of unit testing, system testing, functional testing, acceptance testing and release testing.
- Understand how systems adapt and evolve, and how systems are maintained throughout their lifespan.
- Understand the range of software project management tasks, including planning, resource and people management, and risk management. Understand standard project management techniques and tools, and be able to apply these techniques and tools to a software development project.
- Understand the role and importance of quality management activities in the software development process, including reviews and inspections. Undertake software quality assurance activities as part of the software development process.
- Explain how software configuration management helps ensure software quality. Undertake software configuration management activities, including version management, change management and release management.
- Use industry standard tools for all areas of the software development process, including tools for all areas of software development, including analysis, design, testing, project management and configuration management.

Syllabus
- Engineering/Software/Software Engineering
- Software Process Models
- Agile Software Development Approaches
- Systems Analysis and Design
- Software Implementation and Deployment
- Software Testing
- Software Evolution
- Software Project Management
- Software Project Planning
- Quality Management and Configuration Management

Prerequisites
None.

Coursework
Portfolio of completed tasks.

Assessment
20% coursework.
80% exam.

Recommended reading
Sommerville, I (2016). Software Engineering. Pearson.

Software Engineering II   Level 6

15 credits
BUCI067H6

Short name: SE2
Module leader: Jan Hidders

Module outline
Software Engineering II covers a range of advanced topics in software engineering. The first part of the module focuses on software quality. It covers several key quality related issues, including software reliability, dependability, safety and security. The module also builds on the topic of risk management and mitigation previously introduced in Software Engineering I. The second part of the module focuses on several key topics in modern software engineering, including software reuse, distributed systems engineering, service-oriented software engineering, and software engineering for large complex systems. At the end of the module, students will be able to understand the broader landscape of the discipline of software engineering, and be able to apply advanced techniques and theory to their software development activity.

Aims
Software Engineering II is designed to:

- Introduce and explore mechanisms for building safe, reliable, resilient, secure and dependable software systems.
- Explore in detail the concept of risk, risk management and risk mitigation.
- Provide a detailed understanding of key concepts in the areas of software procurement and implementation.
- Introduce and explore several advanced topics in contemporary software engineering: notably, distributed systems engineering, service-oriented software engineering, and software engineering for large complex systems.
- Provide students with the opportunity to participate in practical software engineering tasks.
- Empower students to be able to develop software in a systematic, structured rigorous, safe and secure manner.

Learning Outcomes

- Understand how software engineering fits within the wider discipline of systems engineering. Understand the socio-technical and business context of information systems.
- Understand the key concepts of dependability and reliability in software engineering, and explain industry standard approaches for ensuring software dependability and reliability.

- Explain the concept of software safety, and understand the software engineering activities that ensure software safety.
- Understand the key concepts of cybersecurity and be able to undertake a cybersecurity risk assessment.
- Understand the software engineering processes and techniques that ensure software security and resilience. Explain how these processes and techniques are applied in industry.
- Understand risk and software engineering approaches for mitigating risk. Analyse risk and draw up risk management measures.
- Understand different approaches towards software procurement and implementation, including software reuse, COTS and bespoke software development. Explain the affordances and constraints associated with different procurement and implementation methods.
- Explain what a distributed system is. Understand the key challenges involved in creating distributed systems.
- Understand the concept of 'software as a service'. Understand different approaches to implementing software as a service and the challenges of implementing software as a service.
- Explain the concept of 'system of systems'. Understand the particular challenges faced in the design and implementation of system of systems software.
- Understand the concepts of embedded software and real-time systems software, and the challenges faced building embedded, real-time systems.

Syllabus
- Systems Engineering
- Software Safety, Dependability and Reliability
- Software Security and Resilience
- Risk Analysis and Management
- Cybersecurity
- Software Reuse
- Distributed Software Engineering
- Service Oriented Software Engineering
- System of Systems Engineering
- Real-time Software Engineering
- Prerequisites

Prerequisites
Software Engineering I

Coursework
Students will performed a detailed risk assessment on a case study organisation.

Assessment
20% coursework.
80% exam.

Recommended reading
Sommerville, I (2016) Software Engineering. Pearson.

4 STUDENT SUPPORT

Student Services at Birkbeck encompass a wide range of services within Birkbeck, aimed at supporting students' learning experience and personal development.

Advice Service
Our trained advisors are on hand to provide information and advice about many aspects of your studies at Birkbeck including but not limited to: application and enrolment process, applying for government loans and financial support from the College, and payment options.
Where we cannot answer questions immediately, we will either get back to you with an answer or refer your query to a specialist team who can.

Ask us a question, call us on 020 3907 0700 or come along to our drop-in sessions for help and support. Alternatively, please visit our website for further information.

Careers and Employability Service
We provide comprehensive careers advice, events and information services both in person and online. The service is free and available to all Birkbeck students and recent graduates.
To find out how we can help you to enhance your career development and employability ask us a question or visit the Students' Employability Space. Alternatively, please visit our website for further information.

Counselling Service
We offer a free, non-judgmental and confidential counselling service to support you with emotional or psychological difficulties during your time at university.
To make an appointment for an initial consultation, please email counselling-services@bbk.ac.uk with your name, student ID, gender and telephone number. Alternatively, please visit our website for information about the service including a comprehensive selection of self-help resources which may be useful in gaining a greater understanding of the personal challenges you are facing and the ways in which you can think about addressing them.

Disability and Dyslexia Service
At Birkbeck we welcome students with disabilities and we are committed to helping you seize the opportunities that studying here presents. Regardless of your condition, our experienced, understanding and welcoming staff are here to support you during your studies.
To make an appointment, please contact the Wellbeing Team from your My Birkbeck profile by clicking on 'Ask us' and selecting 'New Ask'or call us on 020 3907 0700. Alternatively, please visit our website for information about a Study Support Plan, Disabled Students' Allowance, free dyslexia screening and more.

Study Skills
Through a range of workshops, accessible learning materials, and one-to-one meetings, our Learning Development Service is here to help you to fulfil your potential in a number of ways while studying at Birkbeck. Visit our Learning Skills module on Moodle for resources that will help you build academic skills and increase academic performance.

Ask us a question, call us on 020 3907 0700 or visit our website for advice and support with study skills.

Mental Health Advisory Service

We provide specialist advice and support in a safe, non-judgemental environment. Like the [Counselling Service](), we are here to help you when you are going through emotional or psychological difficulties. The main difference between our services is that the emphasis of our work is on practical support, rather than therapeutic interventions, to enable you to progress through your studies.

To make an appointment, please contact the Wellbeing Team from your My Birkbeck profile by clicking on 'Ask us' and selecting 'New Ask' or call us on 020 3907 0700. For further information about the service, please visit our [website]().

Nursery Service

We understand that studying while caring for a child or children can be especially challenging and so we offer an affordable, professional evening nursery service, based in our central London campus, for children aged from two to six years.

For further information and contact details, please visit our [website]().

5 SUPPORT FOR STUDENTS WITH DISABILITIES, DYSLEXIA AND MENTAL HEALTH NEEDS

At Birkbeck there are students with a wide range of disabilities, specific learning difficulties, medical conditions and mental health conditions (hereinafter referred to as disabled students). Many of them have benefited from the advice and support provided by the College's Wellbeing Centre. The Wellbeing Centre is located in G26 on the Ground floor of the Malet Street building.

All enquiries should come to the Wellbeing Centre (tel. 0207 631 6316), who will determine the appropriate referral to specialists in the Disability and Dyslexia Service and Mental Health Service. They can provide advice and support on travel and parking, physical access, the Disabled Students' Allowance, specialist equipment, personal support, examination arrangements, etc.

On enrolment you need to complete a Study Support Plan (SSP), which will set out the reasonable adjustments that we will make with physical access, lectures, seminars, assessments and exams. After you complete this and provide disability evidence, we confirm the adjustments you require and then your department, examinations office, etc. will be informed that your SSP is available and adjustments can be made. You should contact the Wellbeing Service if any of your adjustments are not in place.

Access at Birkbeck

Birkbeck's main buildings have wheelchair access, accessible lifts and toilets, our reception desks and teaching venues have induction loops for people with hearing impairments, and we have large print and tactile signage. Accessible parking, lockers, specialist seating in lectures and seminars and portable induction loops can all be arranged by the Disability & Dyslexia Service.

The Disabled Students' Allowance

UK and EU (with migrant worker status) disabled students on undergraduate and postgraduate courses are eligible to apply for the Disabled Students' Allowance (DSA). The DSA provides specialist equipment including computers with assistive technology and training, personal help (e.g., study skills tutors, mentors and BSL interpreters) and additional travel costs for students who have to use taxis. It provides thousands of pounds worth of support and all the evidence shows that students who receive it are more likely to complete their courses successfully.

The Wellbeing Centre can provide further information on the DSA and can assist you in applying to Student Finance England for this support. From September 2016, new students will receive their note-taking support from the University rather than the DSA.

Support in your Department

Your Department is responsible for making reasonable adjustments in learning and teaching and assessment, including permission to record lectures, specialist seating, extensions on coursework, etc. Whilst we anticipate that this support will be provided by the Programme Director, tutors and Programme Administrator in the Department, they will also have a Disability Lead. If you experience any difficulties or require additional support from the Department then they may also be able to assist you. They may be contacted through the Programme Administrator.

Support in IT Services and Library Services

There is a comprehensive range of specialist equipment for students with disabilities in IT Services. This includes an Assistive Technology Room, which may be booked by disabled students. We have software packages for dyslexic students (e.g. Claroread and Mind view), screen reading and character enhancing software for students with visual impairments available in our computer laboratories, specialist scanning software, large monitors, ergonomic mice and keyboards, specialist orthopaedic chairs, etc. We have an Assistive Technology Officer, who can be contacted via IT Services.

The Library has an Assistive Technology Centre, where there is also a range of specialist equipment, including an electronic magnifier for visually impaired students, as well as specialist orthopaedic chairs and writing slopes. The Disability and Dyslexia Service Office refers all students with disabilities to the Library Access Support service, who provide a comprehensive range of services for students with disabilities and dyslexia.

Examinations and Assessments

Many disabled students can receive support in examinations, including additional time, use of a computer, etc. In exceptional circumstances, students may be offered an alternative form of assessment.

Specific Learning Difficulties (e.g. dyslexia, dyspraxia)

Mature students who experienced problems at school are often unaware that these problems may result from their being dyslexic. Whilst dyslexia cannot be cured, you can learn strategies to make studying significantly easier. If you think you may be dyslexic you can take an online screening test in the computer laboratories – the instructions for the screening test are available on the Disability Office website. If appropriate, you will be referred to an Educational Psychologist for a dyslexia assessment. Some students can receive assistance in meeting the cost of this assessment, either from their employer or from Birkbeck.

Further information

For further information, please call the Wellbeing Centre on 020 7631 6316 or email disability@bbk.ac.uk.

6 IT SERVICES (ITS)

IT Services offer a wide range of modern computing facilities to support students in their academic work.

Facilities and Services
- Secure, up-to-date and easy-to-use network services including email and file storage
- Purpose-built computer workstation rooms equipped with high-speed internet access using networked PCs, fast colour and monochrome printing, and integrated audio-visual systems
- Campus-wide wireless network (eduroam) providing access to your files, email and other internet services using your laptop, tablet or smartphone
- Course management and collaboration software including the Moodle online learning environment where you can access information about your course, view and download teaching materials, and submit coursework
- Wide range of software applications including Microsoft Office, statistical, programming, web authoring and other specialist packages
- Access to a wide range of on-line video tutorials and self-paced training materials provided by Lynda.com

Software for Download

We currently offer the following software for you to download on to your own computer for the duration of your course at Birkbeck:
- Microsoft Office (both Office 365 and the latest Office version)
- IBM SPSS

Access to Computing Services
- A single username and password provides access to your personal file store and other services including the 'My Birkbeck Profile' where you can check and update your personal details
- You can obtain a Birkbeck email account, hosted for us by Google, or alternatively provide a current contact email address in your 'My Birkbeck Profile'
- A self-service password changing service is provided to enable you to reset a forgotten password

Support and Advice

Our Service Desk is located in the Student Centre on the ground floor of the Main Building on Malet Street for face-to-face support and is available Monday to Friday when the Centre is open.

We also offer telephone (020 7631 6543) and email support (its@bbk.ac.uk) usually from 9am to 7pm (6pm vacations) Monday to Friday. Please check our web site for details and variations to service times.

A full catalogue of our services, guides, and self-help services are available from our web site: http://www.bbk.ac.uk/its/.

7 LIBRARY SERVICES

Although lectures and computing sessions are essential elements of your programme, success in learning depends largely on the reading and research that you undertake. Most items on module reading lists can be found in Birkbeck Library and it is important that you familiarise yourself with the Library as soon as you can. You may also find it useful to use other libraries during your studies.

The entrance to Birkbeck Library is on the ground floor of the main building in Malet Street. Your College ID card gives you automatic access to the Library. The opening hours of the Library are designed to meet the needs of students in full-time work.

Open 7 days a week   8.30am – 11.45pm.

More details about opening hours can be found here: http://www.bbk.ac.uk/lib/about/hours.

You can borrow up to 15 items and they can be renewed as long as no-one else requests them. Most books can be borrowed for 3 weeks. Some books for 1 week. A few items can only be issued for 1 day. Some key course readings are kept at the Issue Desk on the ground floor and can be borrowed for shorter periods of time and some material (marked Reference) cannot be borrowed at all. Books and other materials can be photocopied or scanned within the library.

The Library welcomes considerate users. Please remember to renew your items in good time, or return them if other users have requested them. You can find out more about borrowing, renewing and making requests at http://www.bbk.ac.uk/lib/about/borrowing/.

You can access thousands of e-books, electronic journals and databases online with your Birkbeck username and password.

The Library website is at http://www.bbk.ac.uk/lib. As well as giving comprehensive information about the Library's services and collections, you can also:

- Search the Library catalogue to find books and e-books, renew your books and place requests on items that are out on loan.
- Use Discover to search for and read articles in over 30,000 electronic journal titles and newspapers.
- Search databases to help you find out what has been written about the subject you are researching, including the ACM Digital Library, Proquest Business Collection, IEEE Xplore Digital Library and ScienceDirect see the subject guide for further information: (http://bbk.libguides.com/computerscience).
- Access past exam papers.

Birkbeck students can also use a range of other libraries. Students have reference access to most University of London college libraries. In addition, part-time students can join the SCONUL Access Scheme which allows limited borrowing rights at most other higher education libraries. Full-time students can join for reference access. See the subject guide for more information.

If a book you need is not available in the Library or you require any assistance using the resources or finding information, please ask at the Help Desk. Telephone: 020 7631 6063. Alternatively, contact your Subject Librarian, Aidan Smith, directly. Telephone: 020 7631 6062. Email am.smith@bbk.ac.uk. You can book a 1-1 appointment with him through the subject guide.

8 BUSINESS ENGAGEMENT TEAM

The School of Business, Economics and Informatics has a dedicated Business Engagement team to provide you with extra support. The team delivers the following initiatives to support you in your career aspirations:

Mentoring Pathways
Mentoring Pathways pairs successful applicants with industry professionals for individual advice and guidance. There are a number of places available for final year undergraduates and postgraduate students. We have partnerships with a number of key organisations and work alongside Birkbeck alumni who provide mentors. Applications open in the autumn. Please email mentoring@bbk.ac.uk or visit
http://www.bbk.ac.uk/business/business-services/mentoring-external for more information.

Enterprise Pathways
Whether you are setting out in your journey as an entrepreneur or have already established a thriving business, we offer various pathways to support you. These include a non-credit bearing module with workshops once a month throughout the academic year, access to digital resources, enterprise boot camps and inspirational talks to help you to develop your ideas and network with other students. Please email enterprise@bbk.ac.uk or visit www.bbk.ac.uk/enterprise.

Keeping in Touch
You can also follow BEI on social media for information and conversations:
- Twitter: @BirkbeckBEI
- Facebook, Google+ and LinkedIn: Search 'BirkbeckBEI'

Please visit our website www.bbk.ac.uk/business/business-services for more resources and information.

9 EXAMINATIONS

Most DCSIS examinations take place over a three week period (it can be slightly longer) beginning at about the middle of May of each year and most are held **during the day** (not in the evening). **Examinations for some but not all modules taught by the Department of Management are held in the autumn or the spring terms, and may take place in the evening.** Students need to ensure that they are able to attend the examinations for each module they are taking. The timetable for the summer examinations is usually available by late March.

Examinations Regulations will be received from Registry prior to the examinations and must be strictly followed. Students should take care not to place themselves under suspicion in any way during examinations. Such care should include divesting themselves of all revision notes before entering the examination venue. Students who are found cheating will be severely dealt with.

9.1 Marking

All examination scripts are double marked. They are marked first by an examiner, usually the person who initially set the examination, and secondly by another examiner, usually someone else in the same Department. The scripts are then approved by an external examiner (someone from outside the College, e.g. from another university). The external examiner is able to look at every script but generally only reviews a selection of scripts to see if the standard of marking is consistent with other universities.

9.2 Past Examination Papers

Past papers are available in electronic form via the library web site at http://www.bbk.ac.uk/lib/elib/exam.

9.3 Examination Entry Forms

As an enrolled student on the programme, you are not automatically entered for examinations. It is your responsibility to enter for the appropriate examinations each year. To enter you must fill in an *Examination Entry Form* on the MyBirkbeck web pages. The Examinations Office will contact students by email, to ask for confirmation of the modules in which they are to be examined. In cases of difficulty, advice should be sought from the Programme Director. Late submission of the Examination Entry Form may result in you being excluded from the Examination Halls.

If you have been advised to re-take a module there may be a timetable clash. In such cases you should discuss your situation with the Programme Director who will normally advise that you "knock forward" the module displaced by the re-take. The Programme Director may withdraw a module from your examinations if these rules are breached.

9.4 Results

Detailed examination results can only be communicated by the Registry. You should not ask the module lecturers, Programme Administrator or Programme Director about your examination marks. Module lecturers may supply coursework marks but these cannot be taken as the final coursework marks. Each student will receive a statement of their module marks each year from the Registry and these should be preserved carefully. You will also be written to by the Programme Director to inform you of the decision of the Progression Board as to whether you can proceed to the next year of study. If your results are poor then you may be excluded from the programme. Please note that if you have a debt with the College you will not be informed of your examination results or of your progression until the debt is paid. You will not be allowed to proceed with the programme. Delays may occur if you have not returned books to the library.

10 OTHER INFORMATION

10.1 Organisation of Terms

Birkbeck College operates a term system with three terms per academic year. Modules that are taught in the autumn term, and that have a summer term examination, are revised in the first two weeks of the summer term. Modules that are taught in the spring term and that have a summer term examination are revised in weeks three and four of the summer term. The summer term revision classes are usually on the same week day as in the earlier terms. These rules may vary, for example if there is a clash with a bank holiday.

Revision sessions are very important, and you are strongly advised to attend them.

10.2 Returning to Study
Some new students will not have studied for some time, perhaps since school, and returning to education can prove difficult. The necessary study skills have sometimes been lost (or perhaps never obtained). For some these skills are easily developed but others need to study how to study. There are a number of books and guides on the subject which should prove helpful.

The following study guides are in the College library.
A. Northedge, *The Good Study Guide*, Open University Worldwide, 2005.
L. Marshall and F. Rowland, *A Guide to Learning Independently: basic approach*, Pearson Education Australia 2006.

The following book, which is also in the College library, covers essay writing,
G.J. Fairbairn and C. Winch, *Reading, Writing and Reasoning: a Guide for Students*. Third Edition, Open University Press 2011.

The College offers learning support and skills training. See:
http://www.bbk.ac.uk/student-services/learning-development

10.3 Communication and email
Information is communicated to students in a number of ways, including:
- announcements in classes and on lecturers' home pages;
- Moodle virtual learning environment;
- student e-mail.

10.4 E-mail
All BSc students will be connected to the College e-mail system upon registration with IT Services (ITS) (Note ITS registration is not the same as College Registration/Enrolment.) Access to the e-mail software and your messages is made from the PCs in the various laboratories.

Much use is made of e-mail and Moodle, including the circulation of important information about the programme and administrative arrangements. You should, therefore, regularly look at your e-mail messages. We make an assumption that you will do so. **Failure to read your e-mail is not a legitimate excuse for being unaware of information which has been circulated.** We find that students tend to look at their e-mail on a regular basis when they are undertaking a module that involves logging on to the PCs but they tend to forget when their modules do not involve use of the PCs. You should make sure that you regularly check your e-mail.

If you wish to send a message to another BSc DSC student, then you should address the e-mail to username@students.bbk.ac.uk. To send a message to a DCSIS staff member, see the staff pages accessible from https://www.dcs.bbk.ac.uk/about-us/people/. Staff members are expected to respond to emails within five working days. If there is no response within this time then please contact the programme director. In any email to a staff member include your full name, your student registration number and the name of this programme (BSc Data Science and Computing).

10.5 The Programme Web Site

The Programme home page, from which all the other BSc in DSC pages can be reached easily, is https://www.dcs.bbk.ac.uk/study/undergraduate/bsc-in-data-science-and-computing/

Information which pertains to one module only, e.g. the times of in-class tests and coursework deadlines, is the responsibility of the module tutor and is likely be announced in class or posted on Moodle. It is the responsibility of the student to find out the times for in-class tests. A list of useful web pages is included as the last item in this booklet.

10.6 Submission of coursework

Most modules include course work assessments which contribute to the overall mark for the module. Coursework should be handed in on time. The mark for coursework submitted after the deadline but within two weeks of the deadline will be capped at 40% unless a claim for mitigation has been accepted. Submission of coursework may be paper based or it may be electronic, via the Moodle virtual learning environment, as stipulated by the module tutor.

All paper based coursework for DCSIS modules should be prefaced with a completed copy of the coursework cover sheet available at:
https://www.dcs.bbk.ac.uk/study/undergraduate/bsc-in-data-science-and-computing/

A list of received coursework or of the marks for the coursework may be displayed in Moodle. It is your responsibility to ensure that receipt of your coursework has been logged.

Some items of coursework are received in electronic form e.g. program source code, web pages etc. The responsibility of ensuring receipt of such items still rests with the student. Students must also submit an appropriate coursework form even for electronically submitted coursework.

Coursework policies vary across the College. The above policies apply to modules taught by the DCSIS.

10.7 Personal Tutors

At the beginning of the autumn term new students will be allocated a Personal Tutor. Birkbeck College is committed to helping students achieve their full potential and the Personal Tutor is an important element of this commitment. The Personal Tutor is the first port of call for general advice and information. Specific difficulties should be discussed with the Personal Tutor and any illness or personal problems that may affect performance should be communicated to the Personal Tutor. Questions and issues relating to a particular module would in the first instance normally be directed to the lecturer concerned with that module.

10.8 Financial Difficulties

Students who encounter financial difficulties should see the Programme Director to discuss a way forward. Students who fail to pay their fees are ineligible to continue the programme in any way and are ineligible to sit examinations. Any student who has a debt to the College at the end of the academic year will not be informed of his or her marks until the debt has been cleared. This may result in a delay in progression or a delay in the award of a degree.

10.9 Staff/Student Exchange Committees

Student representatives of each year of the degree programme sit on the Staff/Student Exchange Committee which usually meets once in the autumn term and once in the spring term. The Committee is a forum for an exchange of views, suggestions, feedback and the discussion of any problems, in relation to the degree programme and the various modules.

10.10 Locations

- MAIN BUILDING (MB) is the main College building in Malet Street. This houses the Library, some lecture rooms and the computer laboratories.
- The CLORE MANAGEMENT CENTRE (CMC) is where the Department of Management is located. It is in Torrington Square behind the Main Building.
- GORDON SQUARE is situated north of Malet Street towards Euston Station.
- RUSSELL SQUARE is to the east of Senate House.
- UCL. The Roberts building is opposite Waterstones on Torrington Place. Foster Court is off Malet Place which is North of Malet Street, The Rockefeller building is on the corner of Gower Street and University Street opposite the Cruciform building. See map available at: www.ucl.ac.uk/maps.

10.11 Contacts

Department of Computer Science and Information Systems

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Useful Web Pages

Programme home page:
https://www.dcs.bbk.ac.uk/study/undergraduate/bsc-in-data-science-and-computing/
Staff: https://www.dcs.bbk.ac.uk/about-us/people/

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