

Department of Computer Science and Information Systems

PG Cert Cloud and Data Technologies Programme Arrangements 2018–2019

Version of August 13, 2018

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1 General Information

1.1 Contacts

Programme Director: Igor Razgon, igor@dcs.bbk.ac.uk
Programme Administrator: Zahra Syed, pgadmin@dcs.bbk.ac.uk
Admissions Tutor: Hubie Chen, hubie@dcs.bbk.ac.uk
Projects Tutor: Oded Lachish, oded@dcs.bbk.ac.uk
Disability Officer: Oded Lachish, oded@dcs.bbk.ac.uk

1.2 Web presence

Detailed and updated information about the programme is available from the

• programme internet page:

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www.dcs.bbk.ac.uk/study/postgraduate-specialist/pg-certificate-cloud-and-data-technologies/
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• departmental internet page for current students:

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www.dcs.bbk.ac.uk/current-students/
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• programme Moodle page for enrolled students:

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moodle.bbk.ac.uk/course/view.php?id=4269
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The Moodle Virtual Learning Environment (moodle.bbk.ac.uk) is used to provide detailed information and post announcements about each module on which you are enrolled.

It is your responsibility to familiarise yourself with the contents of both of this booklet as well as the internet pages listed above. You should also consult Moodle and read your College email on a regular basis.

2 Student Support

Every student is allocated a personal tutor in the first weeks of the programme. The personal tutor is someone students can contact to discuss any problems of a non-academic nature. These may relate to special needs or personal problems that may affect the student's academic performance. The Department also has a disability officer whom students can contact.

Academic problems should first be addressed to the lecturer concerned. If the problem is not resolved or it does not relate to a specific module, then the Programme Director should be contacted.

Students on each programme elect Class Representatives from amongst themselves early in the academic year. Class Reps provide a point of contact with the Department for student feedback on modules and other aspects of the programme. They can make the Department aware of students' views both in respect of any problems students are experiencing as well as positive points they want to make. While Class Reps can raise matters with the Programme Director at any time, they also attend Staff-Student Exchange meetings in each of the autumn and spring terms at which students' views on any aspect of the Programme can be raised with the Programme Director. These meetings are minuted and the minutes made available on the Department intranet. Students should make sure that their Class Reps are aware of any matters which they wish to be raised at these meetings.

The Birkbeck Students' Union provides help and advice to students; information about their services can be found on the Students' Union web page: www.birkbeckunion.org

For more general information about Birkbeck, student services and regulations have a look at

www.bbk.ac.uk/student-services.

It is expected that students familiarise themselves with these pages so that they are aware of the services and regulations.

The School of Business, Economics and Informatics has Learning Co-ordinators who can provide general support to students in their studies. They can offer help and support on a variety of topics ranging from writing skills to basic maths. See

www.bbk.ac.uk/business/current-students/learning-co-ordinators

for details.

3 Important Dates

Lectures will commence in the week starting on Monday 1 October 2018. The teaching (i.e., not including exams and project) covers two terms of eleven weeks each (autumn and spring term). The summer term is given over to revision (including revision lectures), exams, and the project.

• Autumn term: 1 October 2018 – 14 December 2018.

• Spring term: 14 January 2019 – 29 March 2019.

• Summer term: 29 April 2019 – 12 July 2019.

Please refer to

http://www.bbk.ac.uk/about-us/term-dates

for the College holiday closing times.

Students should attend lectures during term time as shown in the timetables in Section 4.3. If students are unable to attend lectures, they should arrange with lecturers or fellow-students to obtain copies of any material distributed in class.

Any student who decides to withdraw from the programme should inform the Programme Administrator. Students who simply stop turning up for lectures without formally withdrawing from the programme will still be held liable for fees. It is especially important for international students that they inform the department about any absence.

4 Syllabus

4.1 Introductory Talks

The programme will kick off with introductory talks to students:

- New students: 18:00, Tuesday, 25th September 2018, room MAL 403;
- Returning students: 18:00, Thursday, 27th September 2018, room TBA.

The session for new students will include a short hands-on introduction to the departmental computer systems, as well as short presentations by representatives of the library and the disability office. If you are not able to attend the introductory talk, please arrive early for the first lecture and speak to the Programme Administrator in Room 263 on the second floor of the extension to the Birkbeck main building.

4.2 List of Modules

We give a general overview of the content of the programme here; detailed descriptions of the individual modules are given in Section 5.

The PGCert in Cloud and Data Technologies is a specialist programme of study focusing on technologies which underpin solutions to the problems of handling "big data", an area of growing importance in the IT industry.

Students take the following modules:

- Advances in Data Management (ADM)
- Cloud Computing (CC)
- Data and Knowledge Management (DKM)
- Data Warehousing and Data Mining (DWDM)

Students may take all four modules in one year, or two modules in each of two years.

If you are not a proficient Java programmer or not familiar enough with object-oriented design principles, you are strongly advised to study material such as that available through the following link: https://docs.oracle.com/javase/tutorial/java/concepts/

Information about any subsequent changes and more detailed information about aspects of the programme are available through the Moodle Virtual Learning Environment (moodle.bbk.ac.uk) at

moodle.bbk.ac.uk/course/view.php?id=4269.

Moodle is also used to provide detailed information and post announcements about each module.

4.3 Timetables

The teaching venues will be announced online at:

http://www.dcs.bbk.ac.uk/current-students/

as well as in the My Birkbeck portal. Below is the timetable for the modules. Note that occasionally there might be changes (e.g. swapping of lectures between modules, or additional tutoring sessions). Please consult the web pages of the modules regularly for up-to-date information.

Module abbreviations used in the following timetables are given in Section 4.2 above.

4.3.1 Timetable for 2018/19

Day	Autumn		Spring	
	Module	Time	Module	Time
Monday			ADM	18:00-21:00
Tuesday	DKM	13:30-17:00		
Wednesday			DWDM	18:00-21:00
Thursday	DKM	18:00-21:00		
Friday			CC	18:00-21:00

Please note the following:

- DKM is taught twice Tuesday afternoons and Thursday evenings in the autumn term enabling a student to attend either an evening lecture or afternoon lecture as preferred. Other modules are taught only once in a year, usually in the evening.
- Students following the programme over two years should take DKM in the first year, as ADM and DWDM assume the knowledge covered in DKM. Taking two modules in each year is recommended, but subject to taking DKM in the first year, students may choose to take remaining modules in either year.

5 Module Descriptions

Lectures aim to introduce the key ideas of each module. The specific objectives of each module and the principal readings are circulated at the start of the term. The reading lists for individual modules given below are only indicative. Lecturers will specify, usually at the first lecture, whether or not books need to be purchased for particular modules. Independent study is a key learning objective of the programme.

Most modules have dedicated web pages that provide links to relevant online literature. Depending on the nature of the material, some lecturers use 'lecture outlines' to support their teaching and may even distribute these outlines via their web pages. However, there is no expectation that written notes will be provided for the modules.

Students can also contact lecturers outside the classroom to discuss the material. They can meet the lecturers during scheduled 'office hours' or can contact them via email either to discuss a problem or to make an appointment. Lecturers' contact details are given on the Department web site.

Students are expected to attend all lectures. Any student who decides to withdraw from the programme should inform the Programme Administrator, in writing or by email. Students who simply stop turning up for lectures without formally withdrawing from the programme will still be held liable for fees.

A number of modules require students to submit coursework as part of the assessment. More details are given in Section 6.4 of this handbook.

5.1 Advances in Data Management (ADM)

Teaching Staff

Alex Poulovassilis

Online material

http://moodle.bbk.ac.uk/

Aims

To study advanced aspects of database management and recent advances in data management technologies in three major directions: performance, distribution of data, and heterogeneity of data.

The module examines the technologies underlying modern database management systems. It studies advanced aspects of query processing, transaction management, distributed data management, and recent developments in web data, big data and alternative database architectures.

Syllabus

- Review of the fundamental principles of modern database management systems, relational databases and SQL.
- Query processing and query optimisation.
- Transaction management: ACID properties, concurrency control, recovery.
- Beyond records and objects: stored procedures and functions, triggers, semantic technologies.
- Distributed databases: data fragmentation and replication, distributed query processing, distributed transaction management.
- Heterogeneous data integration.
- XML data management.
- Linked Data.
- Parallel databases.
- NoSQL/NewSQL stores.
- Graph databases.

Prerequisites

A first module in Database Systems (e.g. as taught in a typical UK undergraduate degree in computer science) or the Birkbeck module "Data and Knowledge Management". Knowledge of computer programming.

Assessment

By 2-hour written examination and coursework, with weighting 90% and 10%, respectively.

Reading

- R. Ramakrishnan and J.Gehrke, Database Management Systems, McGraw-Hill 2003 (3rd Edition)
- A.Silberschatz, H.F.Korth and S.Sudarshan, Database System Concepts, McGraw-Hill 2011 (6th Edition)
- M. T. Oszu, P. Valduriez, Principles of Distributed Database Systems, Prentice-Hall 2011 (3rd Edition)
- Research papers will be distributed to students; students will also be directed to Web resources on the subject.

5.2 Cloud Computing (CC)

Teaching Staff

Dell Zhang

Online material

http://www.dcs.bbk.ac.uk/~dell/teaching/cc/

Aims and Outline

This module aims to introduce back-end cloud computing techniques for processing "big data" (terabytes/petabytes) and developing scalable systems (with up to millions of users). We focus mostly on MapReduce, which is presently the most accessible and practical means of computing for "Web-scale" problems, but will discuss other techniques as well.

Students in this module will learn to understand the emerging area of cloud computing and how it relates to traditional models of computing, and gain competence in MapReduce as a programming model for distributed processing of big data.

Syllabus

- Introduction to Cloud Computing
- Cloud Computing Technologies and Types
- Parallel Computing and Distributed Systems
- Big Data
- MapReduce and Hadoop
- Running Hadoop in the Cloud (Practical Lab Class)
- Developing MapReduce Programs
- Link Analysis in the Cloud
- Data Management in the Cloud
- Information Retrieval in the Cloud
- Beyond MapReduce (e.g., Apache Spark)

Prerequisites

Good knowledge of object-oriented programming in Python would be necessary.

MSc students who did not have much experience in software development before joining their respective postgraduate programmes should have already taken the Principles of Programming I (POP1) module.

Coursework

A couple of programming assignments.

Assessment

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

Reading

- J. Rosenberg and A. Mateos, The Cloud at Your Service, Manning, 2010.
- J. Lin and C. Dyer, *Data-Intensive Text Processing with MapReduce*, Morgan and Claypool, 2010.
- Extensive use is made of other relevant book chapters and research papers that are distributed in class or provided online.

5.3 Data and Knowledge Management (DKM)

Teaching Staff

Nigel Martin

Online material

http://www.dcs.bbk.ac.uk/~nigel/teaching/dkm/

Aims and Outline

To study the principles and application of data and knowledge management technology. This module covers the principles and application of data and knowledge management technologies and languages including SQL. Students study the use of these in leading commercial database management systems as well as emerging approaches to data management.

Syllabus

- Database management software: origins and objectives.
- The relational model: algebraic and logical foundations.
- Relational algebra and calculus.
- SQL: data manipulation, host language support for SQL.
- Transaction management: recovery, concurrency.
- Relational database theory: dependencies, normal forms.
- SQL data definition, other features.
- DBMS architectures and implementations.
- DBMS storage and indexing.
- Query optimisation.
- Enhanced database capabilities: procedural extensions to SQL, database triggers, deductive databases.
- Non-relational DBMS, object databases, NoSQL databases.
- Distributed databases, architectures, query processing.
- Databases and the Web, JDBC, alternative persistence frameworks, databases and XML.
- Database research topics.

Assessment

By 2-hour written examination and practical coursework, weighting 90% and 10% respectively.

Pre-requisites and co-requisites to the module

No formal pre-requisite, but a strong aptitude for programming is essential.

Reading

- Raghu Ramakrishnan and Johannes Gehrke, Database Management Systems, Third Edition, McGraw Hill, 2003, ISBN 0072465638.
- Students will also be directed to Web resources on the subject.

5.4 Data Warehousing and Data Mining (DWDM)

Teaching Staff

Nigel Martin

Module URL

http://www.dcs.bbk.ac.uk/~nigel/teaching/dwdm/

Aims and Outline

To study advanced aspects of data warehousing and data mining, encompassing the principles, research results and commercial application of the technologies.

This module covers the organisation, analysis and mining of large data sets to support business intelligence applications. Students study the principles and commercial application of the technologies, as well as research results and emerging architectures underpinning the analysis and mining of "big data".

Syllabus

- Data warehousing requirements.
- Data warehouse conceptual design.
- Data warehouse architectures.
- Data warehouse logical design: star schemas, snowflake schemas, fact tables, dimensions, measures.
- OLAP architectures, OLAP operations. SQL extensions for OLAP.
- Data warehouse physical design: partitioning, parallelism, compression, indexes, materialized views, column stores.
- Data warehouse construction: data extraction, transformation, loading and refreshing. Warehouse metadata. Continuous ETL.
- Data warehouse architecture trends. MapReduce and warehouse architectures: Pig, Hive, Spark.
- Data mining concepts, tasks and algorithms.
- Data mining technologies and implementations. Techniques for mining large data sets, stream mining, architecture trends, standards, products.
- Research trends in data warehousing and data mining.

Prerequisites

A first module in Database Systems (e.g. as taught in a typical UK undergraduate degree in computer science) or the Birkbeck module Data and Knowledge Management.

Assessment

By 2-hour written examination and practical coursework, weighting 90% and 10% respectively.

Reading

- R. Ramakrishnan, J. Gehrke, Database Management Systems (3rd ed.), McGraw Hill, 2003, ISBN 0-07-246563-8.
- M. Golfarelli, S. Rizzi, Data Warehouse Design: Modern Principles and Methodologies, McGraw Hill, 2009, ISBN 978-0-07-161039-1.
- J. Celko, Joe Celko's Analytics and OLAP in SQL, Morgan Kaufmann, 2006, ISBN 978-0-12-369512-3.
- J. Han, M. Kamber, J Pei, Data Mining Concepts and Techniques (3rd ed.), Morgan Kaufmann, 2011, ISBN 978-0-12-381479-1.
- Research papers will be distributed to students; students will also be directed to Web resources on the subject.

6 Administration and Assessment

For detailed College rules and regulations see

http://www.bbk.ac.uk/registry/policies

and, in particular,

http://www.bbk.ac.uk/registry/policies/documents/CAS-regs-18-19.pdf

Below we summarise the most relevant rules for the PG Cert Cloud and Data Technologies.

6.1 Requirements for the Award of the PG Cert

Each taught module available on the programme has a value of 15 credits giving a total of 60 credits for the 4 taught modules.

The programme regulations follow the College Common Awards Scheme. To pass a taught module, a student must obtain a mark of at least 50%.

To be awarded the PG Cert, students must pass the 4 modules.

To be awarded the PG Cert with Merit, students must obtain an average mark of at least 60% over the 4 modules.

To be awarded the PG Cert with Distinction, students must obtain an average mark of at least 70% over the 4 modules.

Students who complete the 4 modules successfully may proceed to the final year of the part-time MSc Advanced Computing Technologies programme under the College procedure for allowing a transfer to another programme with credit for modules already passed.

6.2 Announcement of Results

The Examination Board meets in July to consider the results of the written exams and coursework, and in November to consider the results of the projects and to recommend the award of degrees.

Shortly after the meeting of the exam board, you will receive a letter from the Department about your results. Your results and grades will be officially confirmed by the College.

Students who have not paid their fees will not get any information about their examination results.

6.3 Examinations

Please consult the programme's intranet web page (for enrolled students):

https://www.dcs.bbk.ac.uk/intranet/index.php/PGC_CDT_Intranet

6.4 Coursework

A number of modules require students to submit coursework as part of the assessment. Please consult the web page of the relevant module or contact the teaching staff of the module for particular details.

Submitted coursework must always be the students' own work, except where explicitly noted. Students are required to confirm in writing or via e-mail that each item of coursework submitted is indeed their own work.

The Department and College have strict guidelines and penalties associated with plagiarism, and routinely submit students' work to plagiarism detection services. More details are given in Section 6.8 on "Assessment Offences and Plagiarism" of this booklet.

College policy dictates how Departments will treat work that is due for assessment but is submitted after the published deadline. Any work that is submitted for formal assessment after the published deadline but before the cut-off date (normally ten working days after the deadline) is given two marks: a penalty mark of 50% for postgraduate students, assuming it is of a pass standard, and the "real" mark that would have been awarded if the work had not been late. Both marks are returned to the student. If the work is not of a pass standard a single mark is given.

If you are late submitting work that is to be considered for assessment, then you should submit a mitigating circumstances form (see Section 6.5) and provide written documentation, medical or otherwise, to explain why the work was submitted late. The case will then be considered by the appropriate sub-board or delegated panel of the Board of Examiners. If no case is made then the penalty mark will stand. If the case is made and accepted then the examination board may allow the "real" mark to stand.

College policy about the provision of feedback on assessment is as follows. http://www.bbk.ac.uk/mybirkbeck/services/rules/Feedback-on-Assessment.pdf Unlike many other disciplines, feedback on computer science coursework/tests is often given in the form of model answers/solutions (e.g., program code), rather than textual comments.

6.5 Mitigating Circumstances and Deferral

A Mitigating Circumstances claim should be submitted if valid detrimental circumstances result in:

- the late or non-submission of assessment;
- non-attendance of examination;
- poor performance in assessment.

If a student feels their circumstances warrant consideration by the Board of Examiners, they should notify the Programme Administrator, in writing, in advance, at the earliest opportunity (within 7 days of the assessment deadline or examination) using a *Mitigating Circumstances Claim Form*, which can be downloaded from:

http://www.bbk.ac.uk/registry/policies/documents/MitCircs.pdf

On the form, students should state whether the circumstances relate to non-attendance at an examination or late submission of an assignment and should include supporting evidence (e.g. a medical certificate giving the nature and duration of any illness). Students should be aware that discussing their claim with a member of staff does not constitute a submission of a claim of mitigating circumstances.

For a claim to be accepted a student must produce independent documentary evidence to show that the circumstances:

- have detrimentally affected their performance/submission/attendance in assessment or will do so;
- were unforeseen;
- were out of their control and could not have been prevented;
- relate directly to the timing of the assessment affected.

In **exceptional cases**, students may be permitted to defer the written exams and/or the project to the following year. They must apply by filling in a *Mitigating Circumstances Claim Form*. Students have to do this before **1st May** for exams and by **1st September** for the project.

A student who defers an element of assessment normally has to enter for that element the following year; usually no further deferrals are permitted. Simply not turning up for an exam or failing to submit a coursework or project, without permission to defer, will be considered to be the same as failing it, in the sense that it will count as one of the two attempts that you are permitted to make at passing that element.

6.6 Retake and Reassessment

One reassessment, and **only one**, is allowed for each element. You may be reassessed in a failed coursework, written exam or the project if your marks for that module are below 50%.

Students who fail an assessment and awarded a reassessment opportunity have their reassessment subject to a cap of 50% for the reassessed element. The cap does not apply to a retake of a whole module and to students with accepted mitigating circumstances.

There are no special resit exams; students resit alongside the other candidates in May/June the following year. They normally do so a year after their first attempt. Where the syllabus has changed, we set a paper that is suitable for resit candidates, providing alternative questions where necessary. Note, however, that we do this only for candidates from the previous year, not from further in the past.

6.7 Re-enrolment

Repeat students, i.e., students who have to retake some modules (and are not taking any new modules) will be charged pro-rata based on the number of credits they retake.

Assessment only students, i.e. those students who

- are being reassessed for coursework and/or examinations only
- have deferred their examinations and are not taking any new modules

pay a reduced fee that will allow them access to College facilities (Library and workstation rooms). While deferred students are classed as assessment only they are allowed to attend lectures for revision purposes. They should formally seek the permission of module tutors to ensure classes are not oversubscribed.

6.8 Assessment Offences and Plagiarism

See

http://www.bbk.ac.uk/student-services/exams/assessment-offences

for the College Policy on Assessment Offences.

One particular assessment offence is *plagiarism* that is defined as

"[...] copying a whole or substantial parts of a paper from a source text (e.g., a web site, journal article, book or encyclopedia), without proper acknowledgement; paraphrasing of another's piece of work closely, with minor changes but with the essential meaning, form and/or progression of ideas maintained; piecing together sections of the work of others into a new whole; procuring a paper from a company or essay bank (including Internet sites); submitting another student's work, with or without that student's knowledge; submitting a paper written by someone else (e.g., a peer or relative), and passing it off as one's own; representing a piece of joint or group work as one's own."

Also,

"[a] student who knowingly assists another student to plagiarise (for example by willingly giving them their own work to copy from) is committing an examination offence."

The College considers plagiarism a serious offence, and as such it warrants disciplinary action. This is particularly important in assessed pieces of work where plagiarism goes so far as to dishonestly claim credit for ideas that have been taken by someone else. The College also provides learning support for exams and assessments, please see

 $\label{lem:http://www.bbk.ac.uk/student-services/learning-development}$ and guidelines on plagiarism

http://www.bbk.ac.uk/student-services/exams/plagiarism-guidelines

7 Student Services

The College provides various services to students, see:

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http://www.bbk.ac.uk/student-services
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In particular, there are the Counselling Service, the Disability and Dyslexia Service, and the Mental Health Service. They provide specialist support to students.

7.1 Counselling Service

The Counselling Service

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http://www.bbk.ac.uk/student-services/counselling-service
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provides assistance to students who are experiencing emotional difficulties which may be impacting upon their studies or overall experience at Birkbeck.

7.2 Mental Health Service

Many students experience mental health difficulties at some point in their time at university. Whether you have a formally diagnosed psychiatric condition or other form of mental health difficulty such as anxiety or depression, we encourage you to seek support in your studies. Birkbecks Mental Health Service

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http://www.bbk.ac.uk/student-services/mental-health-advisory-service
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is a first point of contact for students experiencing mental health issues at any stage during their studies.

7.3 Disability and Dyslexia Service

At Birkbeck we welcome students with disabilities. We aim to provide all of our students with a study environment that enables them to participate fully in our courses. The Disability and Dyslexia Service:

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http://www.bbk.ac.uk/student-services/disability-service
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can provide advice and support to students with conditions that impact their ability to study, such as:

- specific learning difficulties (dyslexia, dyspraxia, dyscalculia, AD(H)D)
- sensory impairments (blind/partially sighted, deaf/hearing impaired)
- mobility conditions (including RSI, arthritis, neck back and knee conditions etc.)

- medical conditions (e.g. HIV, CFS, diabetes, cancer, chest and respiratory conditions etc.)
- autism-spectrum conditions (autism or Aspergers syndrome)

They can provide support during your studies including

- Your Study Support Plan
- The Disabled Students' Allowance
- \bullet Access to Learning Fund
- Charities and trusts
- Dyslexia screening test
- Government benefits
- Personal emergency evacuation plans
- Pager alert system
- Rest Room
- Toilet facilities
- Car parking
- Disability and Dyslexia Support in the Library and IT Services

8 Career Development

Most students are interested in developing their careers, either within their current field of work or in a completely new direction. The Careers Group, University of London

http://www.thecareersgroup.co.uk/

offers great expertise and experience in working with students and graduates of all ages and at all stages of career development.

The Careers and Employability Service

http://www.bbk.ac.uk/careers/careers-service

is our in-house service for enhancing career development and employability throughout your time at Birkbeck, from enrolment through to graduation.

There is also Birkbeck Talent, a professional recruitment service aimed exclusively at assisting Birkbeck students to find work whilst studying and after graduation. They work with London's top employers to offer innovative internships, prestigious job vacancies and exciting graduate opportunities. To find out more please visit

http://www.bbk.ac.uk/student-services/birkbeck-talent-service

9 The 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:

9.1 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.

9.2 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 noncredit 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.

9.3 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.