

# UNIVERSITY OF EAST LONDON

## UNDERGRADUATE PROGRAMME SPECIFICATION

### *BSc (Hons) Digital and Technology Solutions*

<b>Final award</b>	<i>BSc (Hons)</i>
<b>Intermediate awards available</b>	<i>CertHE, FdSc</i>
<b>Mode of delivery</b>	<i>UEL on campus, at sites designated by employers</i>
<b>UCAS code</b>	<i>N/A</i>
<b>Details of professional body accreditation</b>	<i>N/A</i>
<b>Relevant Benchmark statements</b>	<i>Digital and Technology Solutions Professional apprenticeship standard</i>
<b>UEL Academic School</b>	<i>Architecture, Computing and Engineering</i>
<b>Date specification last updated</b>	<i>April 2016</i>

### Alternative locations for studying this programme

<b>Location</b>	<b>Which elements?</b>	<b>Taught by UEL staff</b>	<b>Taught by local staff</b>	<b>Method of Delivery</b>
<i>Sites designated by employers</i>	<i>All</i>	<i>Yes</i>	<i>No</i>	<i>Block mode delivery or by negotiation with employer</i>

## The summary - UCAS programme profile-

### BANNER BOX:

Earn while you learn and learn on the job! The BSc (Hons) Digital and Technology Solutions apprenticeship degree is designed to equip you with the skills needed to thrive in rapidly changing technology environments. If you want to work for a company or organisation at the forefront of technological change and innovation and get paid to study for a degree at the same time then this course will help you achieve your goal.

### ENTRY REQUIREMENTS

Individual employers will set the selection criteria, but this is likely to include three 'A' levels (typically 240 UCAS points), including Maths, although some employers will accept other relevant qualifications or experience. In addition, applicants will require GCSE Mathematics (C or above) and English (C or above)

Students may be admitted through Accreditation of Experiential Learning (AEL) or Accreditation of Certificated Learning (ACL) processes. We will interview and assess individually those who do not have these qualifications but who have relevant work experience.

In the case of applicants whose first language is not English and who do possess a GCSE English qualification, then IELTS 6.0 (or equivalent) is required.

At UEL we are committed to working together to build a learning community founded on equality of opportunity - a learning community which celebrates the rich diversity of our student and staff populations. Discriminatory behaviour has no place in our community and will not be tolerated. Within a spirit of respecting difference, our equality and diversity policies promise fair treatment and equality of opportunity for all. In pursuing this aim, we want people applying for a place at UEL to feel valued and know that the process and experience will be transparent and fair and no one will be refused access on the grounds of any protected characteristic stated in the Equality Act 2010.

### ABOUT THE PROGRAMME

#### What are Digital and Technology Solutions ?

Digital and Technology Solutions apprenticeship degrees are based upon the Level 6 Digital and Technology Solutions Professional apprenticeship standard, approved by the Skills Funding Agency (SFA) and the Department of Business, Innovation and Skills (BIS). The apprenticeship standard was developed by a group of major companies including Fujitsu, Hewlett Packard, IBM, BT, Ford, Network Rail and Lloyds Banking Group.

Apprentices who enrol on Digital and Technology Solutions degrees will develop technical, business, project, interpersonal and behavioural skills and knowledge to operate effectively in

the digital economy and will gain a qualification that is both competency-based and set within the context of their workplace.

As part of their degree, apprentices specialise in one of six areas determined by their employer; software engineering, IT consultancy, business analysis, data analysis, cyber security analysis and network engineering.

## **Digital and Technology Solutions at UEL**

The BSc (Hons) Digital and Technology Solutions degree at UEL equips apprentices with a range of core skills and knowledge in the areas of information systems, systems development, databases, computer and network infrastructure, business organisation, IT project management, cyber security and professional and interpersonal skills. In addition to these core skills and knowledge, every apprentice will acquire a set of advanced skills and knowledge associated with one of the six specialisms.

### **Programme structure**

The duration of the course will depend upon the needs of your employer and how much study time is available to you. Depending upon the number of modules that you study each academic year, it will take between four (three 30 credit modules per academic year) and six (two 30 credit modules per academic year) years to complete the degree.

The level 4 modules are common to all specialisms. At Level 5, there are three modules that are common plus one module that is specific to your specialism. At Level 6, there is one common module, one module that is specific and the Synoptic Project which all students take and which involves tasks that are specific to your specialism.

### **Learning environment**

An essential part of all apprenticeship degrees such as the BSc (Hons) Digital and Technology Solutions is learning on the job. Typically you will spend 80% of your time working and the remaining 20% studying at UEL but this course is delivered in such a way that enables students to directly apply and develop the skills and knowledge gained on-campus in their working environment. Learning on the job is however a two-way process and hence the experiences gained in the work place can be related to the academic content of the degree, producing a synergistic approach to learning.

As a UEL student, you will have access to a wide range of teaching and learning facilities including lecture and seminar rooms, a well-resourced library and a number of specialist labs. These labs support a wide range of subjects including networking, network security and digital forensics, operating systems, programming, database and web development. We also make extensive use of Moodle, a virtual learning environment, to give extra support to students and enable easy communication between students and staff.

### **Assessment**

Assessment of all modules will be based upon competences. Within each module, there are a number of competences which map onto the skills, technical knowledge, attributes and behaviours specified by the Digital and Technology Solutions Professional apprenticeship standard. To pass a module, you will need to demonstrate all of the competences associated

with the module. This approach guarantees that, once your degree is complete, you will have acquired all the competences specified by the standard. It will also serve as preparation for the Synoptic Project, during which you will be required to integrate and demonstrate the full range of skills and knowledge associated with your specialism.

A significant proportion of the competencies will be assessed via coursework which can take a variety of forms including presentations, reports and coding exercises. Wherever possible, coursework has been designed in such a way as to allow you to complete some or all of it within your working environment. A number of modules use examinations as a means of testing competencies. These examinations can also take a variety of forms including multiple choice and short answer questions. In all cases, you will be given opportunities to prepare for your assessments and, post-assessment, you will receive detailed feedback, identifying your strengths and areas in which the standard of your work could be improved.

Your degree classification will be based on your performance in the Level 5 and 6 modules.

If you have a disability and/or particular learning needs you should discuss assessments with your Programme Leader to ensure that you are able to fully engage with all the assessment within your programme.

### **Project work**

Towards the end of the course, you will undertake a major project, providing you with the opportunity to apply a wide range of skills and knowledge gained during the course. The project will be work-based and will involve the solution of a problem that is relevant to your employer. The exact nature of the problem will depend upon your specialism. For example, Software Engineers might design and develop a significant piece of software to achieve defined business objectives, for a defined user group or customer group, to meet business needs and involving the application of appropriate levels of security. A network engineer might plan and configure a network to meet a defined specification, to satisfy security requirements, using one or more of the defined tools and to meet specified criteria and performance levels.

All project students will be expected to plan their project effectively, to produce a report, detailing every aspect of their project work, and to present their work to an audience including their employer and project tutor.

### **Added value**

The content of our modules is, in many cases, closely aligned with professional certifications such as Cisco's CCNA and CCNP, Microsoft's Certified Solution Developer, CompTIA's Security+, Oracle and the ITIL suite of qualifications. Studying this course will help you to acquire the knowledge and skills required to gain these certifications thereby enhancing your CV and making you even more attractive to your employer.

## **IS THIS THE PROGRAMME FOR ME?**

**If you are interested in .....**

- Digital technology and how it can transform businesses, organisations and the lives of individuals
- How computers and information technology can be harnessed to gain competitive advantage
- The application of computers and information technology to problem solving

- Any of the following specialist fields within IT; software engineering, IT consultancy, business analysis, data analysis, cyber security analysis or network engineering.

### **If you enjoy....**

- Designing and building computer based systems and solutions
- Solving mathematical and technical problems
- The challenge of finding solutions to challenging, complex problems
- Listening to and working with others to identify and develop these solutions
- Investigating and making use of new technologies

### **If you want....**

- To gain both broad and specialist knowledge within the area of Computer Science
- To work for a company or organisation at the forefront of technological change and innovation
- The practical skills needed to thrive in rapidly changing, technology-driven environments
- To work for a company or organisation and be paid to study at the same time
- To communicate and work with people from a wide variety of backgrounds

### **Your future career**

This course is specifically designed for students who are already in or will shortly begin employment within the IT sector. Students will be selected for this apprenticeship degree by their (prospective) employer and will be given, as part of the course, the opportunity to specialise in one of six areas; software engineering, IT consultancy, business analysis, data analysis, cyber security analysis or network engineering. Upon completion of this course, you will continue to develop your specialist knowledge and skills within your employer's organisation.

### **How we support you**

- We regularly invite guest speakers from industry to talk to our students and provide them with networking opportunities
- As part of our civic engagement strategy, we provide our students with opportunities to work with the wider community and thereby further develop their skills. Examples include the annual, international Hour of Code event during which our students run training sessions for young people interested in computer science.
- You will be allocated a personal tutor who will support and guide you throughout your course
- You will be allocated a mentor who will be based within your employer's organisation
- Throughout your studies, you will receive support via our virtual learning environment, Moodle
- Additional help and support is available from our SkillsZone to help develop your study skills
- Specialist support is available for students with Dyslexia or whose second language is English
- Specialist technical staff are on-hand to help you with practical and laboratory work
- We have a one-stop shop, the Hub, which can deal with general enquires and problems

### **Bonus factors**

Unlike traditional degree courses, apprenticeship degrees are funded jointly by the Skills Funding Agency (SFA) and the apprentice's employer. Apprentices pay nothing towards their tuition fees.

## Programme aims and learning outcomes

### What is this programme designed to achieve?

This programme is designed to give you the opportunity to:

- develop technology enabled solutions for both internal and external customers, in a range of areas including software, business and systems analysis, cyber security, data analysis and network infrastructure.
- implement technology solutions that enable organisations and businesses to develop new products and services and to increase productivity using digital technologies.
- develop a wide range of skills and competencies in one of the following areas; software engineering, IT consultancy, business analysis, data analysis, cyber security analysis and network engineering.

### What will you learn?

#### Knowledge

- The exploitation by business of technology solutions to gain competitive advantage
- Contemporary techniques for designing, developing, testing, correcting, deploying and documenting software systems
- The role of data management systems in managing organisational data and information.
- Organisational theory and change management
- The various roles, functions and activities related to technology solutions within an organisation
- Delivery of technology solutions projects which are consistent with business needs.

#### Thinking skills

- The application of analytical and critical thinking skills to technology solutions development
- The application of structured problem solving techniques to complex systems and situations

#### Subject-Based Practical skills

- The analysis of a business domain in order to identify the role of information systems
- The design, implementation, testing and debugging of software to meet requirements
- The implementation of database solutions using an industry standard database management system (DBMS)
- The identification, analysis and evaluation of security threats and hazards to planned and installed information systems or services
- The application of industry standard processes, methods, techniques and tools to execute projects
- The planning, design and management of computer networks with an overall focus on services and capabilities

#### Skills for life and work (general skills)

- Oral and written communication skills
- Effective team working
- Personal development planning and life-long learning
- Effective research using literature and other media

## The programme structure

## Introduction

All programmes are credit-rated to help you to understand the amount and level of study that is needed.

One credit is equal to 10 hours of directed study time (this includes everything you do e.g. lecture, seminar and private study).

Credits are assigned to one of 5 levels:

- 3 equivalent in standard to GCE 'A' level and is intended to prepare students for year one of an undergraduate degree programme
- 4 equivalent in standard to the first year of a full-time undergraduate degree programme
- 5 equivalent in standard to the second year of a full-time undergraduate degree programme
- 6 equivalent in standard to the third year of a full-time undergraduate degree programme
- 7 equivalent in standard to a Masters degree

## Credit rating

The overall credit-rating of this programme is 360 credits.

## Typical duration

The expected duration of this programme is 4-6 years part-time. This programme is not available in full-time mode.

## How the teaching year is divided

The teaching year begins in September and ends in June.

A typical student will register for up to 90 credits in any academic year. Some students may register for fewer credits per year e.g. 60 credits.

## What you will study when

You will complete modules totalling 120 credits at level four, modules totalling 120 credits at level five and modules totalling 120 credits at level six.

Level	Module Code	Module Title	Distance learning Y/N	Credits	Status*	Year of Study 60 Credits Route	Year of Study 90 Credits Route
4	CD4101	Information Systems	N	30	Core	1	1
4	CD4102	Systems Development	N	30	Core	1	1

4	CD4103	Computer and Network Infrastructure	N	30	Core	2	1
4	CD4104	Business Organisation	N	30	Core	2	2
5	CD5101	Database Systems	N	30	Core	3	2
5	CD5102	Cyber Security	N	30	Core	3	2
5	CD5104	IT Professional Skills	N	30	Core	4	3
5	CD5108	Applications Development	N	30	Core <sup>1</sup>	4	3
5	CD5107	Business Change	N	30	Core <sup>2</sup>	4	3
5	CD5106	Principles of Business Analysis	N	30	Core <sup>3</sup>	5	3
5	CD5109	Business Continuity Planning	N	30	Core <sup>4</sup>	4	3
5	CD5105	Data Analysis and Data Mining	N	30	Core <sup>5</sup>	5	3
5	CD5110	Network Engineering 1	N	30	Core <sup>6</sup>	5	3
6	CD6104	IT Project Management	N	60	Core	5	3
6	CD6113	Synoptic Project	N	30	Core	6	4
6	CD6101	Software Engineering	N	30	Core <sup>1</sup>	5	4
6	CD6102	Consulting and Training	N	30	Core <sup>2</sup>	5	4
6	CD6106	Business Analysis	N	30	Core <sup>3</sup>	5	4
6	CD6105	Security Controls and Processes	N	30	Core <sup>4</sup>	5	4

6	CD6103	Big Data Infrastructure and Manipulation	N	30	Core <sup>5</sup>	5	4
6	CD6107	Network Engineering 2	N	30	Core <sup>6</sup>	5	4

*\*Please Note – A core module for a programme is a module which a student must have passed (i.e. been awarded credit) in order to achieve the relevant named award. An optional module for a programme is a module selected from a range of modules available on the programme.*

<sup>1</sup>Software Engineer specialism only

<sup>2</sup>IT Consultant specialism only

<sup>3</sup>Business Analyst specialism only

<sup>4</sup>Cyber Security Analyst specialism only

<sup>5</sup>Data Analyst specialism only

<sup>6</sup>Network Engineer specialism only

### Requirements for gaining an award

In order to gain an Honours degree you will need to obtain 360 credits including:

- A minimum of 120 credits at level four or higher
- A minimum of 120 credits at level five or higher
- A minimum of 120 credits at level six or higher

In order to gain an Ordinary degree you will need to obtain a minimum of 300 credits including:

- A minimum of 120 credits at level four or higher
- A minimum of 120 credits at level five or higher
- A minimum of 60 credits at level six or higher

In order to gain a Certificate of Higher Education you will need to obtain 120 credits at level four or higher

### Degree Classification

Where a student is eligible for an Honours degree by passing a valid combination of modules to comprise an award and has gained the minimum of 240 UEL credits at level 5 or level 6 on the current enrolment for the programme, including a minimum of 120 UEL credits at level 6, the award classification is determined by calculating;

The arithmetic mean of the best 90 credits at level 6	x	0.8	+	The arithmetic mean of the next best 90 credits at levels 5 and/or 6	x	0.2
---	---	-----	---	--	---	-----

# Teaching, learning and assessment

## Teaching and learning

Knowledge is developed through

- Participation in lectures, tutorials, practicals and workshops
- Directed and general reading
- Primary and secondary research, e.g. using the Internet or Learning Resources Centre
- The application of theory, covered in the classroom, to the workplace

Thinking skills are developed through

- Successful completion of set assessment tasks
- Self-appraisal and self-evaluation
- Critical evaluation of concepts, assumptions, arguments and data

Practical skills are developed through

- Use of general IT applications such as word processors and spreadsheets
- Use of specialised IT applications such as software development tools and database systems
- Use of network equipment such as routers and switches

Skills for life and work (general skills) are developed through

- Group and team working activities
- Communication, both written and oral
- Project work

## Assessment

Knowledge is assessed by

- Examinations, both unseen and based on previously supplied case studies
- Reports and system documentation
- Presentations

Thinking skills are assessed by

- All assessment tasks set, particularly those requiring critical evaluation
- Self-appraisal of performance
- Use of appropriate problem solving skills

Practical skills are assessed by

- Tasks requiring use of general and specialised IT applications
- Use of network equipment and hardware in practicals and demonstrations
- The project

Skills for life and work (general skills) are assessed by

- Group and team working exercises
- Presentations
- Time-constrained assessment tasks

## How we assure the quality of this programme

## **Before this programme started**

Before this programme started, the following was checked:

- There would be enough qualified staff to teach the programme;
- Adequate resources would be in place;
- The overall aims and objectives were appropriate;
- The content of the programme met the approved degree apprenticeship standard
- The programme met any professional/statutory body requirements;
- The proposal met other internal quality criteria covering a range of issues such as admissions policy, teaching, learning and assessment strategy and student support mechanisms.

This is done through a process of programme approval which involves consulting academic experts including some subject specialists from other institutions.

## **How we monitor the quality of this programme**

The quality of this programme is monitored each year through evaluating:

- External examiner reports (considering quality and standards);
- Statistical information (considering issues such as the pass rate);
- Student feedback.

Drawing on this and other information, programme teams undertake the annual Review and Enhancement Process which is co-ordinated at School level and includes student participation. The process is monitored by the Quality and Standards Committee.

Once every six years an in-depth review of the whole subject area is undertaken by a panel that includes at least two external subject specialists. The panel considers documents, looks at student work, speaks to current and former students and speaks to staff before drawing its conclusions. The result is a report highlighting good practice and identifying areas where action is needed.

## **The role of the programme committee**

This programme has a committee comprising all relevant teaching staff, student representatives and others who make a contribution towards the effective operation of the programme (e.g. library/technician staff/employers). The committee has responsibilities for the quality of the programme. It provides input into the operation of the Review and Enhancement Process and proposes changes to improve quality. The programme committee plays a critical role in the quality assurance procedures.

## **The role of external examiners**

The standard of this programme is monitored by at least one external examiner. External examiners have two primary responsibilities:

- To ensure the standard of the programme;
- To ensure that justice is done to individual students.

External examiners fulfil these responsibilities in a variety of ways including:

- Approving exam papers/assignments;
- Attending assessment boards;
- Reviewing samples of student work and moderating marks;
- Ensuring that regulations are followed;
- Providing feedback through an annual report that enables us to make improvements for the future.

The external examiner reports for this programme are located on the UEL virtual learning environment (Moodle) on the school notice board under the section entitled 'External Examiner Reports & Responses'. You can also view a list of the external examiners for the UEL School by clicking on the link below.

<http://www.uel.ac.uk/qa/externalexaminersystem/currentexaminers/>

### **Listening to the views of students**

The following methods for gaining student feedback are used on this programme:

- Module evaluations involving the collection of data via questionnaires
- Informal discussions / meetings between students, teaching staff and the programme leader
- Student representation on programme committees (meeting each semester)

Students are notified of the action taken through:

- Circulating the minutes of the programme committees
- Individual responses to students as required
- Postings on our online discussion forums eg Moodle

### **Listening to the views of others**

The following methods are used for gaining the views of other interested parties:

- Annual student satisfaction questionnaires
- Discussions with former students
- Regular meetings with employers via our Industrial Liaison Board
- Interaction with our professional body, the BCS – The Chartered Institute for IT

### **Where you can find further information**

Further information about this programme is available from:

- The UEL web site (<http://www.uel.ac.uk>)
- The programme handbook (**available from our Moodle sites**)
- Module study guides (**available from our Moodle sites**)
- UEL Manual of General Regulations (<http://www.uel.ac.uk/qa/policies/manual/>)
- UEL Quality Manual (<http://www.uel.ac.uk/qa/policies/qualitymanual/>)
- **The School of Architecture, Computing and Engineering web page** (<https://www.uel.ac.uk/Schools/ACE>)