PROGRAMME SPECIFICATION

Bachelor of Science with Honours in Digital and Technology Solutions

Awarding institution	Liverpool John Moores University
Teaching institution	LJMU
JACS Code	I100
Programme Duration	Part-Time: 4 Years
Language of Programme	All LJMU programmes are delivered and assessed in English
Subject benchmark statement	Computing (2016)
Programme accredited by	
Description of accreditation	
Validated target and alternative exit awards	Bachelor of Science with Honours in Digital and Technology Solutions
	Diploma of Higher Education in Digital and Technology Solutions
	Certificate of Higher Education in Digital and Technology Solutions
Programme Leader	Andrew Laws

Educational aims of the programme

Digital and Technology Solutions is a degree that provides learning based on the workplace. The programme provides apprentices with a solid computing background in general, specific knowledge and understanding of the latest developments in one of the two pathways selected which are Software Engineer and Cyber Security Analyst.

The specific aims of the programme are as follows:

• To provide apprentice with a comprehensive understanding of current and developing professional computer science approaches.

• To provide apprentice with relevant technical skill and experience in the application of the methodologies and techniques of digital and technology solutions.

• To provide an educational underpinning that both addresses leading edge developments in the industry and provides for future professional development, equipping students with the appropriate knowledge and skills for a wide variety of employment and/or further study.

• To encourage students to engage with the development of employability skills by completing a self-awareness statement.

• To develop apprentice' analytical, creative, problem-solving and evaluation skills.

• To encourage apprentices to become autonomous learners.

• To provide a platform for career development, innovation and further postgraduate study.

Target award Learning Outcomes - Bachelor of Science with Honours

A student successfully completing the programme of study will have acquired the following subject knowledge and understanding as well as skills and other attributes.

A student who is eligible for this award will be able to:

1. Be aware of current and developing principles and practices within digital technology solutions.

2. Have widened and deepened their knowledge and skills in the area of digital technology, their applications and supporting technologies.

3. Have been exposed to and applied a range of tools, techniques and approaches currently being used in the application of digital technology.

4. Have analysed and developed a major piece of work in the area.

5. Be able to understand current issues in the relevant aspects of digital technology.

6. Be able to study independently and have developed transferable skills.

7. Be able to work more effectively as part of a team or as a team leader.

8. Demonstrate knowledge and understanding of current issues, concepts, principles and theories related to digital technology.

9. Utilise problem-solving skills.

10. Creatively deploy appropriate tools and techniques for the development of digital technology applications.

11. Appraise computer science techniques and their range of applicability in different problems areas.

12. Apply appropriate research methods critically to conduct computer science related research.

13. Develop and evaluate applications for computer science problematic domains.

14. Deploy effective digital technology solutions.

15. Use and develop supporting technologies for digital technology.

16. Use a wide range of computing facilities effectively

17. Plan and manage projects.

18. Use information technology, e.g. Software Development tools.

19. Apply numerical and formal methods skills to cases involving a quantitative dimension.

20. Communicate effectively by written or verbal means.

21. Plan and manage learning and development.

Teaching, Learning and Assessment

The methods used to enable outcomes to be achieved and demonstrated are as follows:

These include lectures, online tutorials, laboratory work, coursework (both individual and group coursework), projects, seminars and guided independent study.

Students are given feedback on all assessed work produced.

Students are motivated by being given a specific task with an achievable outcome, ranging from completion of a small tutorial exercise to a full-scale individual project at Level 6.

Knowledge and understanding is assessed via formal examination, individual and team coursework, demonstration of practical work, and a full-scale individual project at Level 6.

Assessment methods for each module are specified in the module specifications. Each module is assessed by examination and/or coursework.

Learning Outcome 8 is developed through tutorial group discussion, team work, coursework, projects and presentations. Learning Outcomes 9, 10 and 11 are developed through laboratory work, coursework and projects.

Learning Outcomes 11 and 12 are developed though coursework, projects and guided independent study.

These skills are assessed by coursework, laboratory work and formal exams, as well as project work, reports and presentations.

Practical skills are developed throughout the programme. The many laboratory or workshop based modules reinforce the learning of practical skills. Coursework and projects are designed to provide practical opportunities

for students to work independently and in groups.

The various programming and computer based modules provide important exposure to industrial standards. Learning Outcomes 13, 14, 15, and 16 are developed through laboratory work, coursework and project work.

Learning Outcome 17 is developed through individual and group coursework, laboratory work and project work.

Practical skills are assessed via laboratory sessions, workshops, submission of reports, demonstration of systems, industrial placement and individual projects.

Personal Development opportunities are inherent within the programme.

Key skills are developed throughout the programme in a variety of forms. Specifically through a combination of research related coursework, guided independent study and projects, examinations, group work and presentations. Learning Outcome 18 is developed through a combination of research-related coursework, guided independent study, and projects. Learning Outcome 19 is developed through study of technical methods, examinations, coursework, and projects. Learning Outcome 20 is developed through report writing for coursework and projects, written examinations, teamwork, presentations, and group discussion. Learning Outcome 21 is developed via the management of learning tasks and deadlines for coursework and projects.

Key skills are assessed as part of coursework (18-20), projects (18-20), written examinations (19,20) and presentations (20).

Programme structure - programme rules and modules

The programme is offered in part-time attendance mode over four years. The programme is modular in construction. Modules are normally 10 or 20 credits delivered in one semester. With a 40-credit project module at level 6 delivered across two semesters. Students are required to study 120 credits per level. Levels 4 and 5 have five 20-credit modules and two 10-credit modules. At Level 6, there are four 20-credit modules and a 40-credit project.

The part-time delivery pattern is typically as follows:

Year 1 - 4000DACOMP Introduction to Programming, 4001DACOMP Computer Systems, 4004DACOMP Internet and Web Technologies, 4013DACOMP Problem Solving for Information Systems, 4003DACOMP Data Modelling.

For Software Engineer Pathway:

Year 2- 4002DACOMP Personal and Professional Development, 4010DACOMP Software Engineering Principles, 5002DACOMP Database Systems, 5019DACOMP Mobile and Web Development, 5010DACOMP Object Oriented Systems Development.

Year 3- 5018DACOMP Programming Language Theory, 5013DACOMP Data Structures and Algorithms, 5000DACOMP Research Skills, 5001DACOMP Professional Issues, 6013DACOMP Distributed and Embedded Systems.

Year 4- 6000DACOMP Synoptic Project, 6010DACOMP User Experience Design, 6011DACOMP Contemporary Software Development, 6012DACOMP Cloud Computing.

For Cyber Security Analyst Pathway.

Year 2- 4002DACOMP Personal and Professional Development, 4010DACOMP Software Engineering Principles, 5002DACOMP Database Systems, 5021DACOMP Information Assurance, 5020DACOMP Secure Software Development.

Year 3- 5012DACOMP Operating Systems, 5013DACOMP Data Structures and Algorithms, 5000DACOMP Research Skills, 5001DACOMP Professional Issues, 6017DACOMP Applied Cryptography.

Year 4- 6000DACOMP Synoptic Project, 6015DACOMP Network Defence, 6014DACOMP Network Forensics, 6016DACOMP Ethical Hacking.

The programme adheres to the University Academic Framework with 360 credits needed to achieve the BSc

(Hons) award in Digital and Technology Solutions. Students who do not attain 360 credits may be eligible for alternative exit awards in accordance with the Academic Framework.

The apprentice will study at LJMU for the duration of the four years course. One day a week in term time, with six hours of formal contact. The apprentice will have 5 days' block before the academic year starts for induction. The apprentice will also need to attend any timetabled examinations in addition to the study days.

Apprentices must have been offered a position by an employer before being admitted to the degree. LJMU will then admit the apprentices to the degree based on the following selection process.

All applicants will be required to attend an interview before the admission to the course.

Level 6	Potential Awards on completion	Bachelor of Science with Honours
Core	Option	Award Requirements
6000DACOMP SYNOPTIC PROJECT (40 credits)	6010DACOMP USER EXPERIENCE DESIGN (20 credits) 6011DACOMP CONTEMPORARY SOFTWARE DEVELOPMENT (20 credits) 6012DACOMP CLOUD COMPUTING (20 credits)	40 core credits at level 6 80 option credits at level 6

	6013DACOMP DISTRIBUTED AND EMBEDDED SYSTEMS (20 credits) 6014DACOMP NETWORK FORENSICS (20 credits) 6015DACOMP NETWORK DEFENCE (20 credits) 6016DACOMP ETHICAL HACKING (20 credits) 6017DACOMP APPLIED CRYPTOGRAPHY (20 credits)	

Level 5	Potential Awards on completion	
Core	Option	Award Requirements
5000DACOMP RESEARCH SKILLS (10 credits) 5001DACOMP PROFESSIONAL ISSUES (10 credits) 5002DACOMP DATABASE SYSTEMS (20 credits)	5010DACOMP OBJECT ORIENTED SYSTEMS DEVELOPMENT (20 credits) 5012DACOMP OPERATING SYSTEMS (20 credits) 5013DACOMP DATA STRUCTURES AND ALGORITHMS (20 credits) 5018DACOMP PROGRAMMING LANGUAGE THEORY (20 credits) 5019DACOMP MOBILE AND WEB DEVELOPMENT (20 credits) 5020DACOMP SECURE SOFTWARE DEVELOPMENT (20 credits) 5021DACOMP INFORMATION ASSURANCE (20 credits) 5025DACOMP ADVANCED WEB DEVELOPMENT (20 credits)	40 core credits at level 5 80 option credits at level 5

Level 4	Potential Awards on completion	
Core	Option	Award Requirements
4000DACOMP INTRODUCTION TO PROGRAMMING (20 credits) 4001DACOMP COMPUTER SYSTEMS (20 credits) 4002DACOMP PERSONAL AND PROFESSIONAL DEVELOPMENT (10 credits) 4003DACOMP DATA MODELLING (10 credits) 4004DACOMP INTERNET AND WEB TECHNOLOGIES (20 credits) 4010DACOMP SOFTWARE ENGINEERING PRINCIPLES (20 credits) 4013DACOMP PROBLEM SOLVING FOR INFORMATION SYSTEMS (20 credits)		120 core credits at level 4 0 option credits at level 4

Information about assessment regulations

All programmes leading to LJMU awards operate within the University's Academic Framework.
https://www.ljmu.ac.uk/about-us/public-information/academic-quality-and-regulations/academic-framework

Opportunities for work-related learning (location and nature of activities)

This programme is designed for apprentices working in companies and intended to complete their education study at university level. This is a part-time programme in which the apprentices will be dedicated a company

tutor in addition to the university personal tutor.

Level 4: 4002DACOMP Personal and Professional Development - this module provides students with an opportunity to consider their future role as a computing professional and develop a plan to enable them to progress in their chosen career.

Level 5: 5001DACOMP Professional Issues – this module provides further insight into developing the role of the student becoming a computing professional. Students will be encouraged to become student members of appropriate professional bodies for the computing industry (e.g. ACM, IEEE or BCS) as part of their development.

Level 6: Synoptic project involves work-based learning in which apprentices will select a final year project topic related to their current employment.

Criteria for admission

A/AS Level
Apprentices are expected to obtain an equivalent of 112 UCAS points (Grade BBC), of which at least 100 should come from A2

BTEC National Diploma
BTEC Extended Diploma

To the value of 112 points

BTEC Diploma / 90 Credit Diploma / Subsidiary Diploma /Certificate

To the value of 112 points when combined with other qualifications.

AVCE
Applicants should have or expect to obtain a total of 112 UCAS points overall.

Irish Leaving Certificate
Applicants should have or expect to obtain a total of 112 points overall

Scottish Higher
Applicants should have or expect to obtain a total of 112 points overall

International Baccalaureate
Applicants should have or expect to obtain a total of 112 points overall

Other
Qualifications deemed equivalent to the above upon completion of appropriate assessment will be considered

acceptable.

Applicants should have five GCSE (or equivalent) passes of at least grade C including Mathematics and English

(or IELTS 6.0).

Mature entry
Mature applicants will be considered on a case-by-case basis. The admissions team will be particularly concerned with the length of time since any relevant academic study and relevant background from work experience or 'Access' courses.

Overseas qualifications
Applicants offering other awards will be considered on an individual basis in line with the agreed entry criteria.

External Quality Benchmarks

All programmes leading to LJMU awards have been designed and approved in accordance with the UK Quality Code for Higher Education, including the Framework for Higher Education Qualifications in the UK (FHEQ) and subject benchmark statements where applicable.

The University is subject to periodic review of its quality and standards by the Quality Assurance Agency (QAA) Published review reports are available on the QAA website at www.qaa.ac.uk

Programmes which are professionally accredited are reviewed by professional, statutory and regulatory bodies (PSRBs) and such programmes must meet the competencies/standards of those PSRBs.

Support for students and their learning

The University aims to provide students with access to appropriate and timely information, support and guidance to ensure that they are able to benefit fully from their time at LJMU. All students are assigned a Personal Tutor to provide academic support and when necessary signpost students to the appropriate University support services.

Students are able to access a range of professional services including:

- Advice on practical aspects of study and how to use these opportunities to support and enhance their personal and academic development. This includes support for placements and careers guidance.
- Student Advice and Wellbeing Services provide students with advice, support and information, particularly in the areas of: student funding and financial matters, disability, advice and support to international students, study support, accommodation, health, wellbeing and counselling.
- Students studying for an LJMU award at a partner organisation will have access to local support services

Methods for evaluating and improving the quality and standards of teaching and learning

Student Feedback and Evaluation

The University uses the results of student feedback from internal and external student surveys (such as module evaluations, the NSS and PTES), module evaluation questionnaires and meetings with student representatives to improve the quality of programmes.

Staff development

The quality of teaching is assured through staff review and staff development in learning, teaching and assessment.

Internal Review

All programmes are reviewed annually and periodically, informed by a range of data and feedback, to ensure quality and standards of programmes and to make improvements to programmes.

External Examining

External examiners are appointed to programmes to assess whether:

- the University is maintaining the threshold academic standards set for awards in accordance with the FHEQ and applicable subject benchmark statements
- the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with University policies and regulations
- the academic standards are comparable with those in other UK higher education institutions of which external examiners have experience
- the achievement of students are comparable with those in other UK higher education institutions of which the external examiners have experience

and to provide informative comment and recommendations on:

- good practice and innovation relating to learning, teaching and assessment observed by external examiners
- opportunities to enhance the quality of the learning opportunities provided to students

Please note:

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content, teaching, learning and assessment methods of each module can be found in module and programme guides.