<u>**Form NP3**</u>

Leeds Trinity University

Approved by AG December 2019

PROGRAMME SPECIFICATION

1.   General information

Awarding body / institution	**Leeds Trinity University**
Teaching institution	**Leeds Trinity University**
'Parent' School *(ICE / SAC / SSHS)*	**SCBL**
Academic Group *(or Cluster if clearer)*	**Computing**
Professional accreditation body *(if applicable)*	**n/a**
Final award *(eg. BA Hons)*	**BSc Hons**
Title of programme(s)	**Computer Science**
Subsidiary award(s) *(if any)*	**Certificate of Higher Education in Computer Science** **Diploma of Higher Education in Computer Science** **BSc in Computer Science**
Honours type *(Single / Joint / Combined)*	**Single**
Duration and mode(s) of study	**3 years: full-time**
Month/year of approval of programme	**August 2018**
Start date (this version) *(month and year)*	**January 2020 (BAC)**
Periodic review next due *(academic year)*	**AY 2021/22**
JACS subject code(s) *(Level 3)* **(Please refer to HESA listing on AQO website)**	**I100 (HECOS: 100362)**
UCAS course code & route code **(available from Admissions)**	**COMPSCI**
SITS codes *(Course / Pathway / Route)* **(available from Student Administration)**	**COMPSCI / UGBSN**
Delivery venue(s)	**LTU** **BAC International Study Centre, Bangladesh**

2.   Aims of the programme

Rationale and general aims, including what is special about this programme *(from the student's and a marketing perspective)*

The BSc (Hons) Computer Science programme prepares graduates for a dynamic and fast-developing sector. Students learn the traditional aspects of computer science, but these are set within the context of flexible and agile work environments. Leeds is a leading centre for tech

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businesses and the course has been designed and is supported by a range of local providers, creating a powerful focus on current and future developments, and on preparing highly-employable graduates.

The programme aims are to:
- Acquire a solid knowledge and understanding of the main areas in the field of computer science that are required in a wide range of professions;
- Acquire understanding of, and experience of working with, the latest developments in software technologies, programming concepts, and commercial work practices and methods;
- Develop an understanding of project-based work in a dynamic and ever-changing work environment and to develop the skills and attributes that enable graduates to thrive in such contexts;
- Develop the ability to think critically and independently, whether working as an individual or as a member of a team;
- Develop a range of transferable skills appropriate to graduate-level employment, both through academic project work and through professional placements.

3. Student learning outcomes of the programme

Learning outcomes in terms of:
- **knowledge and understanding (K)**
- **intellectual / cognitive / 'thinking' skills (I)**
- **practical skills specific to the subject (P)**
- **employability skills (E)**

The 'K1', etc codes are used in section 7b) and module descriptors to refer to each of these learning outcomes.

On successful completion of the programme students will have demonstrated:

Knowledge and Understanding

K1 **Subject knowledge**: coherent and detailed knowledge and understanding of the subject of computing and computer applications. This includes relevant academic and professional standards and commercial contexts as required to practise in the field of computer science;

K2 **Currency of knowledge**: professional understanding of a range of standard and emergent technologies, programming tools and methodologies, computational thinking and problem-solving strategies and techniques;

K3 **Contextual knowledge**: coherent and detailed knowledge of a range of issues (moral and ethical, legal, social, environmental and commercial) relevant to professional practice in the computer science sector;

K4 **Commercial understanding**: the nature, purposes, structures, governance and activities of computer science-related organisations, including the importance of customer needs, services and relations, as well as orientation to marketing function, and the Agile organisational methods and procedures required to address those functions.

Intellectual / cognitive / 'thinking' skills

I1 **Problem-solving**: the ability to identify and apply problem-solving techniques to computing requirements, as an individual and within a team;

I2   **Research**: conduct research to support the nature of software development, including the specification, design and secure development processes within the Agile perspective of knowledge and understanding;

I3   **Critical perspective**: critically appraise and apply appropriate strategies to tackle complex computing problems, guided by a theoretical understanding of the subject area.

Practical Skills Specific to the Subject

P1   **Technical proficiency**: produce work evidencing secure use of analytical techniques, design methodologies, programming tools, and effective deployment of the construction and documentation of applications relevant to the domain of computer science through individual and group-based activities;

P2   **Agile project management**: produce work evidencing critical evaluation of approaches to solving complex problems, either independently or in teams, in the design and delivery of products to pre-agreed, and also to dynamic and evolving, specifications; seek, and make productive use of, feedback, from various sources in the design and delivery of products;

P3   **Communicating work methods**: produce structured and sustained reports and presentations, communicating results, including analyses of, or de-briefings on, methodologies, processes and arguments.

Employability skills

E1   **Self-management** – the ability to plan and manage time; readiness to accept responsibility and improve their own performance based on feedback/reflective learning; the ability to take initiative and be proactive, flexible and resilient;

E2   **Teamworking** – the ability to co-operate with others on a shared task and to recognise and take on appropriate team roles; leading, contributing to discussions and negotiating; contributing to discussions; awareness of interdependence with others;

E3   **Business and sector awareness** – an understanding of the key drivers for business success, including the importance of customer/client satisfaction and innovation; understanding of the market/sector in which an organisation operates; the ability to recognise the external context and pressures on an organisation, including concepts such as value for money, profitability and sustainability;

E4   **Problem-solving** – a capacity for critical reasoning, analysis and synthesis; a capacity for applying knowledge in practice; an ability to retrieve, analyse and evaluate information from different sources;

E5   **Communication** – the ability to present information clearly and appropriately, both orally and in writing, and to tailor messages to specific audiences and purposes;

E6   **Application of numeracy** – a general awareness of mathematics and its application in practical contexts; the ability to carry out arithmetic operations and understand data, to read and interpret graphs and tables and to manage a budget;

E7   **Application of information technology** – the ability to identify the appropriate IT package for a given task; familiarity with word-processing, spreadsheets and file management; the ability to use the internet and email effectively.

E8   **Entrepreneurship/enterprise** – the ability to demonstrate an innovative approach and creativity, to generate ideas and to identify and take opportunities;

E9   **Social, cultural & civic awareness** – embracement of an ethos of community and civic responsibility; an appreciation of diversity and ethical issues; an understanding of cultures and customs in the wider community.

See also the learning outcomes for subsidiary awards set out in section 4 below.

3a   External benchmarks

Statement of congruence with the relevant published subject benchmark statements *(including appropriate references to any PSRB, employer or legislative requirements)*
The Computer Science programme is congruent with the most recent QAA benchmark for Computing (February, 2016):   http://www.qaa.ac.uk/en/Publications/Documents/SBS-Computing-consultation-15.pdf

4.   Learning outcomes for subsidiary awards

Guidance	
The assessment strategy is designed so that each of these outcomes is addressed by more than one module at Level 4.	**Generic Learning outcomes for the award of <u>Certificate of Higher Education</u>:** On successful completion of 120 credits at Level 4, students will have demonstrated an ability to: i) design and deliver projects relevant to IT businesses; ii) make sound judgements in accordance with basic disciplinary theories and concepts; iii) evaluate the appropriateness of different approaches to solving problems within the field of computing and IT project management; iv) communicate the results of their work coherently; and will have had specific opportunities to display transferable skills relevant to employment related to the discipline.
The assessment strategy is designed so that each of these outcomes is addressed by more than one module over Levels 4 & 5.	**Generic Learning outcomes for the award of <u>Diploma of Higher Education</u>:** On successful completion of 240 credits, including 120 at Level 5, students will have demonstrated, **in addition to the outcomes for a Certificate**: i) critical understanding of disciplinary principles in Computing; ii) application of concepts outside their initial context; iii) use of a range of computing and project-management techniques; iv) proficient communication of the results of their work;

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The assessment strategy is designed so that each of these outcomes is addressed by more than one module over Levels 4, 5 & 6.

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and will have had the opportunity to develop transferable skills relevant to employment related to the discipline, including successful completion of at least one professional placement or school-based training component.

Generic Learning outcomes for the award of an <u>Ordinary Degree</u>:

On successful completion of 300 credits, including 60 at Level 6, students will have demonstrated, **in addition to the outcomes for a Diploma:**

i)   an ability to make flexible and productive use of computing concepts and techniques;

ii)   critical evaluation of approaches to solving problems in a technological and commercial context;

iii)   an ability to work autonomously and in groups within a structured learning experience;

iv)   effective communication of the results of their work in a variety of forms;

and will have had the opportunity to develop transferable skills relevant to employment related to the discipline, including successful completion of two professional placements or school-based training placements.

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5.   Content

Summary of content by theme
(providing a 'vertical' view through the programme)

The BSc Hons Computer Science programme enables students to develop discipline-specific skills in four key areas: software development; organisational processes; professional experience; and collaborative professional project work. The programme is designed to deliver these skills through vertical strands that provide a means of developing skills and knowledge in each of these areas across all three years of undergraduate study. The programme is also designed to allow students the opportunity to gain specialist skills and knowledge in several emerging fields.

At all Levels students engage in collaborative professional project work which has the function of integrating the content of all the other non-placement modules at that Level. At all Levels the core knowledge and skills-based learning gained on non-placement modules flows into collaborative practice, which, in turn, equips and prepares students for professional experience.

In order to achieve this, the collaborative project work which forms the basis of the COM4044 and COM5044 modules takes place exclusively in Semester 2 and is followed by the professional placement. At Level 6 the COM6042 *Professional Project* module spans both semesters but with the expectation that most of the practical work will take place in Semester 2.

In addition to this, the programme has a progressive and convergent structure that establishes core disciplines in the first year and then synthesises them in the second year in order to equip and prepare students for the professional project work in the final year. The 30-credit COM6023 *Project* module is the capstone of the programme in which students integrate their learning across past modules, including elected specialist modules. It is more than a typical final year project in that it demands continuous engagement with peers and an employer mentor, along with the ability to apply practical and theoretical knowledge in a professional context.

The strands are as follows:

Software development
- COM4002 *Introduction to Tech Stack*
- COM4012 *Introduction to Software Development*
- COM5003 *Further Software Development*
- COM6003 *Secure Development and Deployment*
- COM6033 *Applied Artificial Intelligence* [option module]
- COM6043 *Audio Visual Programming* [option module]

Efficient and effective organisational processes
- COM4022 *Technology in Business*
- COM5013 *User-Centred Design*
- COM5033 *Team Project*
- COM6013 *Cyber Security* [option module]
- COM6053 *Data Science for Business* [option module]

Professional experience
- COM4982 *Ethics, Society and Employability*
- COM5023 *Professional Placement and Development*
- COM6023 *Project*

Collaborative professional project work
- COM4044 *Team Project*
- COM5033 *Team Project*
- COM6023 *Project*

Section 7a of this document (below) describes how the content of the programme is further structured in progressive stages (by Level) to ensure that the teaching and learning is cumulative and progressive.

6. Structure

BSc (Hons) Computer Science (Single Honours)

Duration: 3 years full-time
Total credit rating: 360 (180 ECTS)

<u>Level 4</u> – with effect from September 2020

Core: Students are required to take:

COM4002	Introduction to Tech Stack	Sem 1	20 credits
COM4044	Team Project	Sem 2	40 credits
COM4982*	Ethics, Society and Employability	Sem 1&2	20 credits
COM4012*	Introduction to Software Development	Sem 1&2	20 credits
COM4022*	Technology in Business	Sem 1&2	20 credits
Integrated Assessment Block*		Sem 2	

<u>Level 5</u> – with effect from September 2020

Core: Students are required to take:

COM5013	User-Centred Design	Sem 1&2	30 credits
COM5003	Further Software Development	Sem 1&2	30 credits
COM5023	Professional Development and Placement	Sem 1&2	30 credits
COM5033	Team Project	Sem 1&2	30 credits

Level 6 – with effect from January 2020		
Core: Students are required to take:		
COM6003 Secure Development and Deployment	Sem 1	30 credits
COM6023 Project	Sem 1&2	30 credits
Option: Students are required to choose 30 credits in Sem 1 from:		
COM6033 Applied Artificial Intelligence	Sem 1	30 credits
COM6053 Data Science for Business	Sem 1	30 credits
Option: Students are required to choose 30 credits in Sem 2 from:		
COM6013 Cyber Security	Sem 2	30 credits
COM6043 Audio Visual Programming	Sem 2	30 credits

7. Learning, teaching and assessment

7a) Statement of the strategy for learning, teaching and assessment for the programme

The learning and teaching provision on the Computer Science programme is aligned with the University's Learning, Teaching and Assessment Strategy 2015-2020, supporting the principle that students are co-creators of their own learning and providing the skills and understanding required for them to manage that learning. The following approaches are prioritised in delivering the programme:

Learning:
- **Progressive Learning Structure**: The learning is structured according to levels, to ensure that students are equipped with the knowledge and basic skills in Level 4 that enable them to explore project work at Level 5, building confidence for the independent work undertaken at Level 6. The principles involved are as follows:
  - **Level 4 (Foundation and Tools):** There is an emphasis on learning what university-level study involves – including formal qualities of professional practice and the development, delivery and analysis of clear coding. Core modules cover the technical aspects of programming and systems structures and clarify the ever-changing nature of the commercial and technological context within which such skills are deployed. These will run through the first semester and also the first half of the second semester. The 40-credit COM4044 *Team Project* module then gathers all the taught skills into a single project that is the exclusive focus of the second half of the semester. In this way Level 4 teaches and then synthesises the skills needed to undertake a significant placement within the computing sector.
  - **Level 5 (Range and Exploration)**: students consolidate their understanding of software development and professional computing practice. Student learning is structured in such a way that the foundational skills acquired in Level 4 are both developed and also set to work in more complex environments and with a greater sensitivity to the constraints and opportunities provided by business and market contexts. The structure of the year is, in practical terms, similar to Level 4 in that most of the teaching occurs in Semester 1 with Semester 2 given over to collaborative project work and group seminars in which students learn by synthesis. Again, this equips and prepares students to undertake significant projects as part of their COM5023 *Professional Placement and Development*.
  - **Level 6 (Focus and Specialisation)**: students build on core software development skills gained in Levels 4 and 5, as well as selecting from a range of specialist modules on specific aspects of emerging technologies and practices. Optional modules are deliberately offered in specific semesters so as to support their progress in COM6023 *Project* module which occupies both semesters and serves to cap the entire programme with a body of work that will demonstrate their capability to employers.

Teaching:

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- **Student-Led Enquiry**: The programme's modules offer small class/group sizes, with an emphasis on student-led enquiry, the production of original work, and the development of both independent and group project work. A variety of different teaching methods are used to encourage active student participation in learning (both as individuals and in groups), with regular provision of formative feedback on those activities.
- **Directed Activities**: To support student learning and active engagement in teaching sessions, specific activities are completed each week between sessions. These are also used, as appropriate, as a vehicle for formative feedback and for structuring teaching sessions.
- **Use of VLE**: To support student-led inquiry, learning materials and resources are supplied in advance via Moodle. Resources offered include reading materials; bespoke videos and podcasts; links to external sites and materials, and additional module handout material and Powerpoints.

Assessment:
- **Formative Assessment**: The teaching is predominantly student-led and project-based. Students receive on-going formative assessment and guidance in every module studied. In the professional and practical modules formative assessment is central and students are specifically expected to provide feedback on the work of other students and discuss, in a reflective commentary, how formative feedback received from peers and lecturers has been incorporated into their own production work.
- **Diversity of Assessment methods**: The typical assessment requirement for Computer Science is via production, either individually or team-based. Students are also expected to communicate their use of judgement in the selection and application of tools and methods and in their engagement with team-structures and project goals. These de-briefs are variously delivered through code-walk throughs or project reports.

Students engage in Integrated Assessment at Level 4.

7b) Programme learning outcomes covered

Adjust LO codes as necessary. ↓ Lighter or hatched shading indicates modules that are not core, ie. not all students on this programme will undertake these.	Assessed learning outcomes of the programme										Skills development								
	K1	K2	K3	K4	I1	I2	I3	P1	P2	P3	E1	E2	E3	E4	E5	E6	E7	E8	E9
	Subject Knowledge	Knowledge Currency	Contextual Knowledge	Commercial Understanding	Problem Solving	Research	Critical Perspective	Technical Proficiency	Agile Project Management	Communicating Work Methods	Self-management	Teamworking	Business & sector awareness	Problem-solving	Communication	Application of numeracy	Application of IT	Entrepreneurship / enterprise	Social, cultural & civic awareness
COM4002 **Introduction to Tech Stack**	■	■	□	□	■	■	■	■	▨	■	■	■	□	■	□	■	□	■	□
COM4012 **Introduction to Software Development**	■	■	□	■	■	□	□	■	□	■	■	■	□	■	□	■	□	□	□
COM4022 **Technology in Business**	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
COM4044 **Team Project**	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	□	■	■	■
COM4982 **Ethics, Society and Employability**	□	□	□	□	■	■	■	□	□	■	■	■	■	■	■	□	■	■	■
Integrated Assessment Block	■	■	□	■	■	■	□	■	■	■	■	■	■	■	■	■	■	■	■
Level 5																			
COM5003 **Further Software Development and Delivery**	■	■	■	□	■	■	■	■	■	■	■	■	□	■	■	■	■	□	□
COM5013 **User-Centred Design**	■	■	■	■	■	■	■	■	□	■	■	■	■	■	■	■	■	□	□
COM5023 **Professional Develoment and Placement**	□	□	■	□	□	□	□	□	□	□	■	■	■	■	■	■	■	■	■

COM5033 Team Project																					
Level 6																					
COM6003 Secure Development and Deployment (core)																					
COM6023 Project (core)																					
COM6033 Applied Artificial Intelligence (option Sem 1)																					
COM6053 Data Science for Business (option Sem 1)																					
COM6013 Cyber Security (option Sem 2)																					
COM6043 Audio Visual Programming (option Sem 2)																					

8. Entry requirements

Honours degree programmes
Applicants should normally have achieved the following prior to registration for the programme: 5 academic qualifications, of which at least 2 should be level 3 qualifications equivalent to A2 and must also include GCSE grade C or 4 or above in both English Language and Mathematics (or equivalent qualification). Some equivalent qualifications and the current typical offer conditions in terms of UCAS Tariff points are detailed in the undergraduate prospectus. For students whose first language is not English, a pass in an approved test in English is needed, e.g. the International English Language Testing Service (IELTS), with a minimum of 6.0 and with no component below 5.5, or accepted equivalent test. Full details of entry requirements are published by course on the Leeds Trinity website. Applications are welcome from those with few or no formal qualifications. Any previous relevant work experience and learning will be assessed and, where appropriate, accredited as part of the application process. Please see Leeds Trinity's Recognition of Prior Learning Guidelines and Procedure. .

9. Progression, classification and award requirements

Details of requirements for student progression between levels and receipt of the award(s) (A certain level of attainment which must be achieved in a specific module; any modules exempted from condonement, any deviation from the standard institutional stipulations for award classification, e.g. exclusion of Level 4 module marks from Foundation Degree classification)
Undergraduate Taught Programme Academic Regulations apply.

10. Prerequisites

Details of modules which must be passed before enrolment on a module at a higher level
None.

11. Additional support needs

Arrangements made to accommodate students with additional support needs and any unavoidable restrictions on their participation in the programme/scheme
Students with disabilities or other support needs are welcome and are expected to be able to participate fully in this programme. Arrangements will be made, via the normal University support systems, to accommodate students with additional support needs wherever possible, with reasonable adjustments made to accommodate individual needs.