PROGRAMME QUALITY HANDBOOK

2023-2024

FdSc Computing

Contents

1. Welcome and Introduction to FdSc Computing

1.1 Welcome

Welcome to your Programme Quality Handbook (PQH), this PQH is designed to provide you with programme related information both for before and during your studies. In addition to this PQH our UCSD interactive website contains our online Handbook to support you which studying at UCSD. A link is available here Student Handbook | University Centre South Devon (ucsd.ac.uk). It can also be navigated by going to www.ucsd.ac.uk and searching for student handbook.

The IT industry is modern, fast-moving and in need of qualified professionals. This course reflects industry trends with a mix of programming paradigms, hardware and networking, systems analysis and databases, client and server web development, business IT and other topics to provide you with skills for progression & employability in today's Computing and IT sector.

This programme has been designed to equip you with the skills and knowledge base required to work in your chosen specialism or other graduate opportunities. It is also a platform from which you can undertake additional vocational and academic qualifications.

This Programme Quality handbook contains important information including:
The approved programme specification
Module records

Note: The information in this handbook should be read in conjunction with the current edition of:
- Your Institution & University Student Handbook which contains student support based information on issues such as finance and studying at HE
  - Available in University News & Information on Moodle.
- Plymouth University's Student Handbook
  - available at:
    https://www.plymouth.ac.uk/your-university/governance/student-handbook

1.2 Programme Management

Role	Person	Email address
Personal Tutor and/or HE Lead	Adrian Carlson-Hedges (Year 2)	acarlsonhedges@southdevon.ac.uk
	Andy Cuffe (Year 1)	andycuffe@southdevon.ac.uk
Programme Coordinator	Conrad Saunders	conradsaunders@southdevon.ac.uk
Higher Education Coordinator	Steve Caunter	stevecaunter@southdevon.ac.uk
Curriculum Head	Simon Thorpe	simonthorpe@southdevon.ac.uk
Assistant Principal	Steve Caunter	stevecaunter@southdevon.ac.uk

1.3   Personal Tutor

Your personal tutor's role is to support your personal and professional development, develop your academic skills, manage student expectations, achieve positive student-staff communications, provide pastoral support and signposting, and monitor your wellbeing. They should be your first port of call for advice and/or direction for further support on academic or pastoral matters.

Year 1 personal tutor: Andrew Cuffe

Andrew is a Lecturer of Computing teaching across levels 3-5 in variety of software engineering subjects, detailing the basics of programming structure, design, implementation and testing. Andrew teaches a variety of computer science disciplines, shaping the learners understanding and technical knowledge of control systems, low level programming, C, C++ and C#. He also teaches C++ programming courses to industry and has relevant experience of working within the computing sector on a variety of projects for manufacturing, stock control, low level control systems (IEEE488) and system installations.

Year 2 personal tutor: Adrian Carlson-Hedges

Adrian is a lecturer of Computing teaching across levels 3 to 5. Adrian has over 20 years industry experience in a range of roles including: software development, database development & administration, project & programme management, IT service delivery, risk management and information governance. Whilst in industry Adrian attained qualifications in project management (Prince 2 practitioner), database administration (Oracle Certified Professional), IT service management (ITIL), and information security (CISSP). In 2015 Adrian retrained to become a teacher and spent 6 years teaching computing in secondary schools, before joining the South Devon College in 2021.

1.4   Tutoring at UCSD

UCSD's aim is to facilitate and promote positive student engagement in learning, wellbeing, academic success, and progression. This is coordinated through an integrated tutorial model:

1. Personal and pastoral tutoring to monitor students' wellbeing and support their personal development
2. An academic tutoring curriculum to support in the development of academic and employability skills and monitor your academic and professional progress
3. Professional services including the Student Support Hub team, library services, employability, academic standards and quality, and the University of Plymouth Student's Union for students on UoP programmes.

The integrated tutorial model ensures all students have a personal tutor and scheduled weekly group and/or one-to-one Tutorials, and are able to access professional study skills, wellbeing, disability and employability guidance from the HE Student Support Hub.

The tutorial curriculum and Personal Development is tailored for your programme including consideration of the size of programme, the hours that you are studying and the level of your programme. Details will be provided by your personal tutor

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1.5   Course Contact List

Details of your modules leaders and how and when the can be contacted are below.   You can also view the profile of the teaching team within the curriculum area that your programme is based via this link: https://www.ucsd.ac.uk/research-and-expertise/digital-and-computing/

If you have questions about a module, please contact the appropriate module leader.

If you have any questions about the programme or your pastoral needs please contact your personal tutor.

If you have any questions about fees, funding or support from the university please contact university@southdevon.ac.uk

Module Leader	Modules	Contact
Liam Bottomley	Secure Application Development (Year 2)	liambottomley@southdevon.ac.uk
Adrian Carlson-Hedges	Introduction to Computer Security (Year 1) Employability and Professional Development (Year 2) Advanced Project (Year 2)	acarlsonhedges@southdevon.ac.uk
Andy Cuffe	Programming Concepts (Year 1) Computer Systems Infrastructure (Year 1) Object Oriented Programming (OOP) (Year 2)	andycuffe@southdevon.ac.uk

	Application Development for Embedded Operating Systems (Year 2) Database: Analysis, Design & Development. (Year 1)	
Steve Levenson	Client-Side Web Development (Year 1)	stevelevenson@southdevon.ac.uk
Conrad Saunders	Fundamentals of Computer Networks (Year 1) Enterprise Networks (Year 2)	conradsaunders@southdevon.ac.uk

1.6   Preparing for your programme

At UCSD, we understand that degree level study is a big step up from previous studies. To help prepare you for the degree we recommend engaging with preparatory activities. Each year UCSD organise Stepping up to HE workshops, with a focus on supporting you to develop your research and writing skills, alongside academic techniques.

For more information on the workshops and resources available, please visit our website: https://www.ucsd.ac.uk/the-first-year-at-university/.

The Student Support Hub is available throughout the duration of your programme and offers a range of services, acting as a first port of call for academic, study, wellbeing, disability, fees/funding, employability and progression support. When progressing to the next level of study of your higher education, there are also workshops and activities available to support you with progressing your graduate skills.

Preparatory reading is a great way to develop your knowledge and skills to be ready for the next level of study in higher education. Please see below some recommended reading to undertake prior to the start of your course:

Preparatory activities and reading

The resources below are recommended reading, e-learning or other activities to undertake prior to joining the course. In addition to the pre-reading listed below, each module guide contains a list of books and other resources that will help you research and complete that module. Module guides are published at the start of the academic year and will be made available to you via Microsoft Teams and Moodle.

Module Title	Activity / Reading List
SOUD1507 – Introduction to Information Security	Familiarise yourself with the basics of Cyber Security with the free online Cisco eLearning at : https://skillsforall.com/course/introduction-to-cybersecurity
SOUD1505 – Fundamentals of Computer Networks	https://www.ibm.com/cloud/learn/networking-a-complete-guide https://www.cisco.com/c/en/us/solutions/small-business/resource-center/networking/networking-basics.html https://skillsforall.com/course/getting-started-cisco-packet-tracer - Complete the course
SOUD1414 – System Infrastructure	Arduino Programming Projects: Learn how to build cool, fun, and easy Arduino Projects (English Edition) Paperback – 17 Mar. 2023 by Rohan Barnwal Exploring Computer Hardware: The Illustrated Guide to Understanding Computer Hardware, Components, Peripherals & Networks (Exploring Tech) Paperback – 28 Feb. 2022 by Kevin Wilson Effective C: An Introduction to Professional C Programming Paperback – 9 Oct. 2020 by Robert C. Seacord Brilliant PowerShell for Beginners: A complete guide to PowerShell scripting for beginners: A complete PowerShell scripting guide for beginners Paperback – 13 Jan. 2022 by John Graham Dynamics and Control of Robotic Systems Hardcover – 27 Sept. 2019 by Andrew J. Kurdila (Author), Pinhas Ben-Tzvi https://www.tutorialspoint.com/cprogramming/index.htm https://www.tutorialspoint.com/powershell/index.htm

SOUD1506 – Programming Concepts	Learning C# by Developing Games with Unity: Get to grips with coding in C# and build simple 3D games in Unity 2022 from the ground up, 7th Edition Paperback – 29 Nov. 2022 by Harrison Ferrone

Implementing C# 11 and .NET 7.0: Learn how to build cross-platform apps with .NET Core (English Edition) Paperback – 27 April 2023 by Fiodar Sazanavets

C# Programming in easy steps, 3rd edition: Modern coding with C# 10 and .NET 6. Updated for Visual Studio 2022 Paperback – Illustrated, 31 Mar. 2022

C# Tutorial (tutorialspoint.com) |
| SOUD1413 - Database: Analysis, Design and Development | Simple SQL: Beginner's Guide To Master SQL And Boost Career (Zero To Hero) Paperback – Large Print, 3 Jun. 2022

Introduction to DBMS: Designing and Implementing Databases from Scratch for Absolute Beginners (English Edition) Paperback – 10 May 2022 by Dr. Hariram Chavan (Author), Prof. Sana Shaikh (Author)

Database Design for Mere Mortals: 25th Anniversary Edition Paperback – 4 Nov. 2020 by Michael J Hernandez (Author)

Introduction to NOSQL: using MongoDB and Typescript Kindle Edition by David Li (Author)

Mastering Microsoft Power BI: Expert techniques to create interactive insights for effective data analytics and business intelligence, 2nd Edition Paperback – 30 Jun. 2022 by Greg Deckler (Author), Brett Powell (Author)

https://www.tutorialspoint.com/mysql/index.htm |
| SOUD1412 – Client-Side Web Development | https://www.w3schools.com |

1.7   Curriculum design principles

Programme Rationale (summary)

The FdSc Computing has been delivered at South Devon College for over 15 years. Its last major overhaul was in 2016 when the original aims and objectives were revisited, as incremental updates were no longer considered to be appropriate, therefore a new approval was undertaken. The programme aims to maintain close ties with local industry, and actively seeks feedback from employers to ensure the content being delivered meets the needs of local industry.

The FdSc Computing programme provides support to students in development and progression towards employment both personally and professionally. The aim of the programme was, and continues to be, to produce highly skilled and well-qualified computing professionals that fit with the current trends and needs of the computing industry. It enables students to develop understanding, design and exploitation of contemporary computation and computer technologies. It will extend the central elements such as: mathematics, fundamentals of computation and realisation of computer systems in both hardware and software. It will allow the students to apply their understanding, skills, knowledge and experience to create social and economic value by building secure, reliable and useable systems.

The FdSc Computing programme is aimed at people from a direct educational progression route, typically level 3 BTEC or A-Level equivalent, people currently work in the computing industry or can demonstrate awareness of basic hardware and software fundamentals. Relationships with employers through the apprenticeship route will support recruitment and provide work-based opportunities as well as typical feeder courses such as BTEC, A-Level, and T-Level. The programme will allow students who have already developed level three qualifications in the field to further enhance their skills and knowledge to degree level study and achievement.

Context

The programme aims to provide a broad foundation across computing allowing students to further specialise at level 6 if choosing to complete a final year at Plymouth University. Whilst most students attending the program will have relevant level 3 qualifications, these are not mandatory. This means that in many areas, the first year teaching covers from the basic level upwards. In the fields of networking, web development and programming, the curriculum follows a spiral model, where much of the content taught in the first year is refreshed and studied at a deeper level in the second year. Within each module, content typically builds depth and complexity using an adjacency learning approach.

A variety of applications, tools, software, and third-party products are used to provide a broad range of experiences for learners over and above traditional lecture, seminar, or taught sessions. These add practical elements that reinforce the theory covered in lectures

Content

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1.8   Teaching and Learning Strategy

Teaching and Learning across the department follows the college wide strategy of using evidence informed teaching principals. The curriculum is designed to recognise and respond to the needs of all our learners and ensure they gain the knowledge, skills and behaviours they individually need to confidently succeed and thrive in life, future learning and employment. A range of delivery methods aim to provide students not just with the knowledge, but also with the practical skills required to be an effective Computing professional. Each module combines in class learning with directed self-study that will provide learners with a range of independent activities that reinforce the on-site learning.

Resources

The computing programme has access to a dedicated computing dept network that is run and managed within the team. This enables the installation of software and/or creation of virtual environments that might not otherwise be practical on the college network. To provide further opportunities, the program also makes use of practical lab-based sessions using a variety of sources: Practice Labs, Immersive Labs, PortSwigger, and others.

In addition to the pre-reading listed earlier in this document, each module guide contains a list of books and other resources that will help you research and complete that module. Module guides are published at the start of the academic year, and the reading list is updated each year.

1.9   Research and employment-informed teaching and learning

UCSD supports academic teaching staff to develop their subject knowledge, professional practice and keep currency in their academic field through investment in continuous professional development through a variety of mechanisms.

Research: Incorporating research into the curriculum of a Computing Degree program allows students to explore and contribute to the latest advancements and innovations in the field. By engaging in research projects, tests and practical assessment, students can develop critical thinking skills, enhance their problem-solving abilities, and gain a deeper understanding of theoretical concepts. Research opportunities will also enable students to work closely with faculty members who are actively involved in cutting edge research, providing them with valuable mentorship and guidance.

Employment informed teaching: In a rapidly evolving field like computing, it is crucial for educational institutions to equip students with the skills and knowledge that align with industry demands. By incorporating employment informed teaching strategies, such as case studies, industry guest lectures, and hands-on projects, students can bridge the gap between theoretical concepts and real-world applications. This approach helps students develop a practical skill set that is relevant to the current job market, increasing their employability upon graduation.

Learning outcomes: The integration of research and employment-informed teaching and learning in a Computing Degree program results in several benefits for students. Firstly, it enhances their ability to critically analyze and evaluate emerging technologies, ensuring they stay up to date with the latest trends in the field. Secondly, it provides them with practical experience and exposure to industry-relevant tools, technologies, and practices, making them more competitive in the job market. Lastly, it fosters a culture of innovation and curiosity, encouraging students to think creatively and contribute to the advancement of computing.

1.10   Resources to support outstanding teaching and learning

UCSD provides a wide range of specific resources available to students. It is the intention that these resources help developed students' academic ability through a high-quality experience. Students will also benefit from the development of graduate and employability skills, so they are able to succeed in and beyond higher education. The University Centre campus resources include dedicated HE teaching spaces in the UCSD building, a campus wide wireless network, free access to Microsoft 365 whilst enrolled on your programme and a library with over 25,000 books, newspapers, magazines and eBooks and e-journals, such as the SAGE premier collection. Within your module guides you will be provided with a reading list that you will be able to undertake additional and further reading to support your learning.

Your programme has access to physical lecturers and virtual learning using Microsoft Teams. All learning resources will be on Teams and Module Guides will be on Moodle, including assignments.

1.11   Knowledge, skills and behaviours developed on the programme

2. The FdSc Computing programme is closely aligned with two difference higher level apprenticeship programs offered by South Devon College and UCSD. Learners working towards their apprenticeship combine a day in college with time spent working for their relevant employers. Higher Level Apprenticeship students complete two modules in their first year and a further two modules in their second year. The Knowledge / Skills / Behaviours required to meet the needs of their apprenticeship have been mapped across the 4 modules that apprenticeship learners complete.

3.

Knowledge, skills and behaviours are the backbone of any apprenticeship occupational standard https://www.instituteforapprenticeships.org/developing-new-apprenticeships/developing-occupational-standards/ They set out the competencies a student needs to demonstrate to be awarded their technical qualification and apprenticeship standard.

- **Knowledge** - the information, technical detail, and 'know-how' that someone needs to have and understand to successfully carry out the duties. Some knowledge will be occupation-specific, whereas some may be more generic.
- **Skills** - the practical application of knowledge needed to successfully undertake the duties. They are learnt through on- and/or off-the-job training or experience.
- **Behaviours** - mindsets, attitudes or approaches needed for competence. Whilst these can be innate or instinctive, they can also be learnt. Behaviours tend to be very transferable. They may be more similar across occupations than knowledge and skills. For example, team worker, adaptable and professional.

Software Developer -
https://findapprenticeshiptraining.apprenticeships.education.gov.uk/courses/2

Network Engineer –

https://findapprenticeshiptraining.apprenticeships.education.gov.uk/courses/1

Knowledge, skills and behaviour mapping to modules

Network Engineer – Higher Level Apprenticeship

Each X in a column indicates one or more learning objectives that satisfy this K/S/B

Technical Competencies / Learning Outcomes	SOUD1414 Systems Infrastructure	SOUD1505 Network Fundamentals	SOUD2368 Enterprise Networks	SOUD2366 Advanced Project
Knowledge				
K1: the causes and consequences of network and IT infrastructure failures	X	XX		
K2: the architecture of typical IT systems, including hardware, OS, server, virtualisation, voice, cloud, and applications	XXX	XXX	XXXX	X
K3: the techniques for systems performance and optimisation	XX		XX	X
K4: diagnostic techniques and tools to interrogate and gather information regarding systems performance	X		X	
K5: organizational procedures to deal with recording information effectively and in line with protocols			X	XX
K6: Service Level Agreements (SLAs) and their application to delivering network engineering activities in line with contractual obligations and customer service			X	X
K7: their role in Business Continuity and Disaster Recovery			X	
K8: the purposes and uses of ports and protocols		XX		
K9: devices, applications, protocols, and services at their appropriate OSI and/or TCP/IP layers.		XX		
K10: the concepts and characteristics of routing and switching		XXX		
K11: the characteristics of network topologies, types, and technologies.		XXX	XXX	X
K12: wireless technologies and configurations.		XXX		
K13: cloud concepts and their purposes.			XX	X (OPTIONAL)
K14: functions of network services		XXX		X (OPTIONAL)
K15: the different types of network maintenance			X	X

K16: how current legislation relates to or impacts occupation				X
K17: troubleshooting methodologies for network and IT infrastructure		X	X	
K18: how to integrate a server into a network			XX	X (OPTION AL
K19: the types of security threats to networks and IT infrastructure assets		XX		X
K20: how to use tools to automate network tasks			XX	X (OPTION AL
K21: approaches to change management				XX
Skills				
S1: apply the appropriate tools and techniques when securely operating and testing Networks		XX	XX	
S2: install and configure the elements required to maintain and manage a secure Network		XX	XX	
S3: implement techniques to monitor and record systems performance in line with defined specifications	XX			
S4: maintain security and performance of the system against known and standard threats		X		X
S5: apply the appropriate tools and techniques to identify systems performance issues	X		X	
S6: apply the appropriate tools and techniques to gather information to troubleshoot issues and isolate, repair or escalate faults		XX	XX	
S7: communicate outcomes of tasks and record in line with organisational procedures and SLAs including adherence to good customer service standards			X	X (OPTION AL
S8: upgrade, apply and test components to systems configurations ensuring that the system meets the organisation's requirements and minimises downtime. This should include backup processes.	X			X (OPTION AL
S9: record task details whether face-to-face, remote or in writing in line with organisational requirements			X	X
S10: interpret information received from a manager, customer or technical specialist and accurately implement the defined requirements				X
S11: monitor, identify and implement required maintenance procedures	X	X	X	

S12: implement techniques to optimise systems performance in line with defined specifications	X			
S13: organise and prioritise clients/stakeholders' requests in line with SLAs and organization processes			X	
S14: explain their job role within the business context to stakeholders to enable a clear understanding on both sides of what their remit is and convey technical constraints in appropriate language considering accessibility and diversity implications.				X
S15: operate securely and apply the appropriate process, policies, and legislation within their business responsibilities				X
S16: communicate with a range of stakeholders taking into consideration of organisations cultural awareness and technical ability				X
S17: apply the appropriate level of responsibility when planning and prioritizing work tasks				X
S18: apply the relevant numerical skills (Binary, dotted decimal notation) required to meet the defines specifications	X	XX		
S19: ensure compliance of network engineering outputs with change management processes				XXX
S20: select the appropriate tools and comply with organisation policies and processes when upgrading systems	X			X (OPTIONAL
Behaviours				
B1: work independently and demonstrate initiative being resourceful when faced with a problem and taking responsibility for solving problems within their own remit	XXXXX	XXXXX	XXXXX	XXXXX
B2: work securely within the business				X
B3: work within the goals, vision, and values of the organisation				XX
B4: take a wider view of the strategic objectives of the tasks/ projects they are working on including the implications for accessibility by users and diversity.				X
B5: works to meet or exceed customers' requirements and expectations				XX
B6: Identifies issues quickly, investigates and solves complex problems and applies appropriate solutions. Ensures the true root cause of any problem is found and a solution is identified which prevents recurrence	X	XX	XX	
B7: Committed to continued professional development to ensure growth in professional skill and knowledge.	XXXXX	XXXXX	XXXXX	XXXXX

B8: work effectively under pressure showing resilience	XXXXX	XXXXX	XXXXX	XXXXX

Software Developer – Higher Level Apprenticeship

Each X in a column indicates one or more learning objectives that satisfy this K/S/B

Technical Competencies / Learning Outcomes	SOUD1412 Client-Side Web Development	SOUD1506 Programming Concepts	SOUD2463 Secure Application Development	SOUD2366 Advanced Project
Knowledge				
K1: all stages of the software development life cycle (what each stage contains, including the inputs and outputs)		XX		
K2: roles and responsibilities within the software development lifecycle (who is responsible for what)		XX		
K3: the roles and responsibilities of the project life cycle within your organisation, and your role		X		X
K4: how best to communicate using the different communication methods and how to adapt appropriately to different audiences		X		X
K5: the similarities and differences between different software development methodologies, such as agile and waterfall.		XX		X
K6: how teams work effectively to produce software and how to contribute appropriately		X		
K7: software design approaches and patterns, to identify reusable solutions to commonly occurring problems	X	XX	XX	
K8: organisational policies and procedures relating to the tasks being undertaken, and when to follow them. For example, the storage and treatment of GDPR sensitive data.			XX	X
K9: principles of algorithms, logic and data structures relevant to software development	X	XX	XX	
K10: principles and uses of relational and non-relational databases			XX	

K11: software designs and functional or technical specifications	XX	XXX	XX	X
K12: software testing frameworks and methodologies	XX	XX	XX	X
Skills				
S1: create logical and maintainable codes	XX	XX	XXX	X
S2: develop effective user interfaces	XX	XX	XX	X
S3: link code to data sets			X	X (optional)
S4: test code and analyse results to correct errors found using unit testing	XX	XX	XX	X
S5: conduct a range of test types, such as Integration, System, User Acceptance, Non-Functional, Performance and Security testing.	XX	XX	XX	X
S6: identify and create test scenarios	XX	XX	XX	X
S7: apply structured techniques to problem solving, can debug code and can understand the structure of programmes to identify and resolve issues	XXX	XXX	XX	X
S8: create simple software designs to effectively communicate understanding of the program	XX	XX	XX	X
S9: create analysis artefacts, such as use cases and/or user stories	XX	XX	XX	X
S10: build, manage and deploy code into the relevant environment	XX	XX	XX	X
S11: apply an appropriate software development approach according to the relevant paradigm (for example object oriented, event driven or procedural)	XX	XX	XX	X
S12: follow software designs and functional/technical specifications	XX	XX	XX	X
S13: follow testing frameworks and methodologies	XX	XX	XX	X
S14: follow company, team or client approaches to continuous integration, version and source control		X		XX
S15: communicate software solutions and ideas to technical and non-technical stakeholders				XX

S16: apply algorithms, logic and data structures	XX	XXX	XX	X
S17: interpret and implement a given design whist remaining compliant with security and maintainability requirements	XX	XX	XX	X
Behaviours				
B1: Works independently and takes responsibility. For example, has a disciplined and responsible approach to risk, and stays motivated and committed when facing challenges	XXXXX	XXXXX	XXXXX	XXXXX
B2: Applies logical thinking. For example, uses clear and valid reasoning when making decisions related to undertaking work instructions	XXXXX	XXXXX	XXXXX	XXXXX
B3: Maintains a productive, professional and secure working environment	XXX	XXXX	XXXX	XX
B4: Works collaboratively with a wide range of people in different roles, internally and externally, with a positive attitude to inclusion & diversity				XXX
B5: Acts with integrity with respect to ethical, legal and regulatory ensuring the protection of personal data, safety and security.	XX	XX	XXX	XX
B6: Shows initiative for solving problems within their own remit, being resourceful when faced with a problem to solve.	XXXXX	XXXXX	XXXXX	XXXXX
B7: Communicates effectively in a variety of situations to both a technical and non-technical audience	XXX	XX	XX	XX
B8: Shows curiosity to the business context in which the solution will be used, displaying an inquisitive approach to solving the problem. This includes the curiosity to explore new opportunities, and techniques; the tenacity to improve methods and maximise performance of the solution; and creativity in their approach to solutions.	X	X	X	X
B9: Committed to continued professional development.	XXXXX	XXXXX	XXXXX	XXXXX

1.12 Assessment and feedback strategy

Assessment of your learning is an essential part of attaining your qualification. Your assessments will be design in accordance with the UCSD Assessment Policy https://www.ucsd.ac.uk/student-life/essential-information/academic-regulations-and-procedures-and-policies/ and the assessment guidance on the UCSD website https://www.ucsd.ac.uk/student-life/support/assessment-guidance/

Your module leaders will support you to develop the skills to succeed in your assessments. But you can also use the self-directed guidance on https://www.ucsd.ac.uk/student-life/support/assessment-guidance/ and receive one-to-one support from the HE Study team by contacting HEstudy@southdevon.ac.uk

Your assessment timetable will be available on Moodle at the start of your course. There are broadly three types of assessment and feedback at UCSD:

- **Formative assessment and feedback** opportunities are embedded into module teaching and assessment for learning. This means your teachers will be continuously assessing you progress and learning towards the modules learning outcomes and giving you verbal feedback, for example in answers to questions, and in response to group activities and your assessment plans.
- **Draft assessment and feedback** are a set time within your module when you can submit a draft version of your assessment for formal feedback. The feedback could be verbal and/or written feedback.
- **Summative assessment and feedback** are the final stages of the assessment cycle. You will formally submit your final assessment task, and receive summative developmental feedback and a grade for the task within 20-working-days.

1.13   Student engagement in ongoing programme development

UCSD sees students as partners in their academic process, we actively seek and respond to your feedback at several points within the year. You and your course peers will elect a Student Representative to represent your views at Student Consultative Forum three times a year. The Lead Student Rep, elected by the whole UCSD student body, chairs the Student Consultative Forum and works with the UCSD leadership team to act on student feedback. Additionally, a Higher Education Student Governor is nominated from the student body to represent your views in South Devon College's governance structures. Students are also asked to give early and end of module review feedback to improve module delivery, and surveys about their student satisfaction once a year. In addition, students can always discuss any concerns or areas of good practice with their personal tutor.

Below, we outline the recent feedback that has been received from students and how we have developed the programme in response to that feedback.

You said:	We did:
Apr-22: "The two days we are in college are too long. By the end of the day, I feel drained and I am not learning at my best. Can you split that into 3 shorter days"	To reduce the cognitive load from Sept 22 The FdSc course is based over 3 days with at most 5 hours of scheduled sessions on any given day.

1.14   Student Support Hub

The University Centre South Devon (UCSD) is committed to an ethos of equality and inclusivity. How we will support you is set out in the Student Development Policy, available on the UCSD website https://www.ucsd.ac.uk/student-life/essential-information/academic-regulations-and-procedures-and-policies/ By becoming a UCSD student you enter a partnership with us, committing yourself to positively engaging and actively taking part in scheduled learning activities, self-directed learning and alerting your teaching team and/or the Student Support Hub to any additional needs you have. In return we commit to support you to achieve your potential. This relationship is set out in our Student Charter https://www.ucsd.ac.uk/student-life/essential-information/academic-regulations-and-procedures-and-policies/

The UCSD Student Support Hub https://www.ucsd.ac.uk/student-life/support/ is based on the ground floor of the University Centre. Many students think that the Support Hub is only for when they have exhausted all other avenues of support. But we encourage you to seek us out as soon as you think that you are struggling, because it is much easier to solve issues when they emerge. Also, students may feel that they are expected or should be able to manage any difficulty, but we are here to help and can support you to make the right decisions for you and your studies. Therefore, all students are encouraged to contact the Hub team early in their student journey, the service is available year-round except for closure days (normally around Christmas), so that you can be supported to thrive:

HE Study Team

The HE Study Team's role is to support you to develop your study and academic skills. You may have just progressed from a Level 3 course such as A' Levels, Access to HE, BTEC, or a Level 3 Diploma, or not have studied for many years, but everyone will find the step up to Higher Education learning a challenge, we are here to support everyone. The team can support you to enjoy and make the most of your academic studies, that includes students who are doing well and want to do better, and those for whom learning is more challenging. There is a wealth of resources on the UCSD website https://www.ucsd.ac.uk/student-life/support/study-skills/ and you can book one-to-one sessions by emailing HEstudy@southdevon.ac.uk sessions can be held face to face or on MS Teams.

HE Disability Team

If you have a disability or difficulty, whether that is physical, sensory, mental health or a learning difficulty, you can receive the support and assistance you need to study. If you are unsure whether your needs would be categorised as a disability or difficulty we are happy to have a chat. Our team will assist and guide you from the initial enquiry, through the application and assessment process, and signpost you to additional resources and services where required. Please contact HEdisability@southdevon.ac.uk How you are paying for the course will impact on the support available and how you apply for it, for more information please visit https://www.ucsd.ac.uk/student-life/support/disability-support

HE Wellbeing Team

The Wellbeing team can provide support to students experiencing wellbeing challenges that impact on their studies we understand that studies can face many difficulties so, don't be

afraid to speak to us. The team offers urgent and regular support to help you adjust to and manage student life, stay positive and motivated, encourage you to continue with your studies, and manage the unexpected. Students who have mental health difficulties can apply for disability support to provide regular and specialist support. For more information see https://www.ucsd.ac.uk/student-life/support/wellbeing-support/ or contact HEwellbeing@southdevon.ac.uk

HE Employability

The Employability team are available to support you as your career plans develop. They support you to search for placement opportunities and help you to find appropriate work while you are studying. You can discuss your ideas, gain support researching opportunities, have feedback on your CV, personal statement or job application, and practice your interview skills. For more information see https://www.ucsd.ac.uk/employability-and-next-steps/ or contact HEemploy@southdevon.ac.uk

Before you start your programme, you should engage with the online resources on our website https://www.ucsd.ac.uk/stepping-up-to-higher-education/ and attend the workshops held by the HE Study team as these provide a detailed and useful introduction to your new academic life. There will also be a course induction by the programme team a week before teaching starts.

UCSD encourages all students to actively engage with their tutor and the HE Student Support Hub to access study skills, wellbeing, disability, and employability support throughout their studies. Make the most of the support available to you, so that you can gain the best degree.

1.15 Becoming a South Devon Graduate

You have enrolled to undertake a qualification about a specific subject, but alongside this UCSD is committed to supporting you to secure higher-level academic knowledge and skills, possess positive personal attributes for your future, and be work-ready with professional knowledge, skills and behaviours. This is known as educational gain – everything you will develop alongside your academic qualification towards becoming a South Devon Graduate. To find out more, visit https://www.ucsd.ac.uk/south-devon-graduate/

Higher-level academic skills

Alongside excellent programme design, and outstanding teaching, learning and assessment on your course, tutors will help you to identify and address any gaps in your academic knowledge, skills and behaviours. This starts before your course begins with preparation activities online and in-person to help you develop foundational academic skills, the tutorial curriculum then scaffolds new and developing knowledge and skills with your peers throughout your course, and you can access one-to-one support from the UCSD Student Support Hub.

Positive personal attributes for your future

South Devon Graduates have positive personal attributes, qualities and characteristics that mean they are confident, resilient and act with integrity. We nurture these attributes through our Ready, Respect and Safe agenda. Students are ready to learn with group and one-to-one support for academic skills, disability and wellbeing. UCSD and our students are encouraged to respect and care for themselves, others and the environment though initiatives related to equality and diversity, sustainability, academic integrity, and behaviour and conduct. Student and staff keep themselves and each other safe through pastoral support, knowledge of safeguarding and Prevent, online safety activities, and opportunities to report misconduct and bullying.

Work-ready

Your teaching team have designed a course to give you the knowledge and skills for a career in your chosen field. Beyond this you will become work-ready though work-based learning, placement activities and assessments that reflect the real world of work, a tutorial curriculum that inspires you to reflect on your growing employability and record them in your Personal Development Plan (PDP), and enrichment activities arranged by your programme team or the wider University Centre, such as Research Showcase.

Throughout your studies at UCSD you will be working toward these academic, personal and work-ready knowledge, skills and behaviours making you a South Devon Graduate.

1.16   Preparation for employment and further academic study

Teaching teams to give a narrative introduction to how their programmes prepare students from employment, further academic study and personal development. This may be lifted from your approval paperwork if it includes that section and updated as necessary. Include progression routes (both formal and informal) and employment examples. You should also mention how you engage with employers to ensure the currency of the programme. Should they also mention how they might meet employers while doing the programme and how the programme integrates with the employment function – this would encourage staff to think about this involvement as well.

Further academic study, equipping students with the necessary skills and knowledge to excel in the job market through a combination of theoretical coursework, practical projects, and hands-on experiences, students gain a comprehensive understanding of computer science principles, programming languages, software development methodologies, networking and emerging technologies. Additionally, career-oriented workshops, industry collaborations, and internship opportunities are provided to enhance students' professional skills, foster industry connections, enabling to facilitate a smooth transition into the workforce.

1.17   UCSD Enterprise and Employability Framework Mapping

The UCSD Enterprise and Employability Framework sets out employability criteria that every UCSD graduate should achieve. Evidence here activity within the programme, or signpost to further support, that matches each of the criteria:

FHEQ level: 5						
Employability Criteria	Definition	Programme Aims and Intended LOs	Module Aims and LOs	Assessment	Extra activity (i.e. trips)	Other UCSD areas of activity
Job-specific skills	Students demonstrate the specialist and technical knowledge and skills needed by employers (in the sector) locally and nationally.	A 1, 2, 3, 4, 5 ILO 3 5, 6	1412 A2/3 LO1,2,3 1413 A3 LO 2/3/4 1414 A3 LO 2/3/4 1505 A3 LO 2/3/4 1506 A3 LO 2/3/4 1507 LO3/4 2463 A2 LO 2/3/4 2462 A2 2364 A2 LO 2/3/4 2366 A3 LO 1/2/3/4 2367 LO 2/3/4 2368 A3 LO2/3/4	SOUD2366 – A2 (Project Planning Software) SOUD1414 – T1(Computer Hardware), P1(Systems control and automation) SOUD1505(C1, T1) SOUD1506(C1, P1,P2 – Create GUI and Console programs) SOUD2364(T1, C1 – Create OOP programs)	SOUD2367 – Unity professional Certification available	(i.e signposting to HE Study Skills support)

				SOUD2367(C1, P1 – Create Game and cross platform Applications) SOUD2368(T1, P1) SOUD 2463(C1, C2)		
General skills (aka. Transferable skills, 'soft' skills)	Students demonstrate the general knowledge, behaviours, and skills needed by every employer and workplace.	A1/2/3/4/5 ILO 2/3/4/5/6	1412 A1 LO4 1507 LO4 2463 LO2/4 2462 A1/2/3 LO 1/2/3 2364 LO 3/4 2366 A1 LO1/2/3/4 2367 LO4	SOUD2367(C1, P1 – Create Game and cross platform Applications)- Present to an Audience. SOUD(1505) – C1 – Vlog SOUD 2462 (A1, A2) SOUD 2463(C1, C2)		
Digital skills	Students demonstrate the essential digital knowledge, behaviours, and skills needed by employers.	A1/2/3/4/5 ILO 1/2/3/4/5/6	All units	All Assessments		
Practice and Experience	Students apply their knowledge and skills to specific career-relevant situations, and within career-relevant contexts.	A34/5 ILO 5/6	2462 A1/2/3/4 2366 A1/2/3 LO 1/2/4	SOUD1505(C1 – Business Network Design context)		

				SOUD2368(P1 – Pressure of timed problem solving) SOUD1507 – A1 SOUD 2462 (A1, A2)		
Careers Guidance	Students explore their knowledge, skills, and behaviours, in terms of their future, employment, and chosen career areas.	A3/4/5/ ILO 2/3/4/5	2462 A1/2/3/4 Tutorial Sessions	SOUD 2462 (A1, A2)		
Enterprise	Students create ideas, set within practical situations, which lead to cultural, social or economic value. This can, but does not have to, lead to venture creation.	A1/4/5 ILO 2/3/4/5/6	2366 A1/3 LO 1/2/3/4 2462 A3/4 LO 2/3/4	SOUD1414 – T1(Computer Hardware), P1(Systems control and automation) SOUD1506(C1, P1,P2 – Create GUI and Console programs) SOUD2364(T1, C1 – Create OOP programs) SOUD2367(C1, P1 – Create Game and cross platform Applications)		

				SOUD 2463(C2)		
Personal Development	Students reflect on their identities, qualities, and values to better understand themselves, from which to make informed choices about future employment.	A3/4/5 ILO 2/3/4/5	2462 A1.2.3.4 LO 1/2/3/4 Tutorial Sessions	SOUD 2462 (A1, A2)		
Professional Behaviours	Students display the professional behaviours required of best practice and suitable for general employment.	A3/4/5 ILO 2/35/	Tutorial Sessions. Behaviours evidenced through timely submission of work to high quality 1505 C1 LO3/4	SOUD1505(C1-VLog) SOUD 2462 (A1, A2) SOUD2463(C2)		
Networking	Students have opportunities to grow and utilise personal networks of support for a wide range of career- and industry-related activities.	A3 ILO 2/3/5	2462 A 1/2/3 LO3/4 2366 A1/2/3 LO 1/4 2367 LO4			

Further information: Employability is a vital part of the learning journey of all UCSD students and is integrated throughout the programme at FHEQ Level 6. As detailed in the UCSD Enterprise and Employability Framework, UCSD students develop their employability across nine criteria. This section highlights any other areas of activity, signposting, or links to industry and employer standards.	Extra employability-related activity will be recorded on the Employability Activity Form.

1.18 Regulations, Policy and Procedures

This is not a definitive list, the UCSD Student Handbook can provide more information
https://www.ucsd.ac.uk/student-life/student-handbook/

Policy/Procedure/Regulation	Provision	Comments
Regulations	Regulations for both UCSD and UoP can be found here	
Terms and Conditions	UCSD	
Fee Policy	UCSD	
Admission Policy	UCSD	
Academic Complaints Policy	UCSD	
Service Complaints Policy	UCSD	
Code of Conduct and Disciplinary Policy	UCSD	
Fitness to Study/Study and Wellbeing Review Policy	UCSD	
Academic Offences Policy	Policy for both UCSD and UoP can be found here	Depending on the awarding body
Extenuating Circumstances Policy	UCSD	
Academic Appeals	Regulations for both UCSD and UoP can be found here	Depending on the awarding body
Assessment Policy	UCSD	
Other – please stipulate		

2.   Programme Specification

2.2   Brief Description of the Programme

The IT and computing industries are dynamic, fast-moving and constantly in need of qualified professionals. This Foundation Degree aims to equip Students with the skills that employers seek in graduates and will open up opportunities for them in both the public and private sectors, both nationally and globally.

FdSc Computing programme reflects industry trends with a mix of programming paradigms, hardware, networking, security, systems analysis and databases, client and server web development and various other topics, all of which are relevant to technology driven, modern industry. Therefore, reflecting the current needs to incorporate 'security by design' concept, emphasis is given to designing and the development of secure software, hardware and networking solutions within all modules of this programme. This will enable students to progress and succeed within today's IT and computing sector by ensuring that they can readily transition into professional practice.

Delivered in a state of the art, purpose-built facility, the course consists of a core curriculum that includes lectures, class discussions, practical, and project work. Students will be taught in specialist computing labs, which provide access to current equipment including the latest industry-standard software from proprietary and Open Source packages.

The programme is delivered by an experienced academic team, who are actively engaged in research and development activities and regularly monitor and update topics to reflect industry trends and standards, ensuring students gain skills that are relevant and current to employment. Students are taught in small groups where there is an emphasis on support, which will enable students to make the most of their studies and realise both academic and career aspirations.

2.3   Details of Accreditation by a Professional/Statutory Body (if appropriate)
   N/A

2.4   Exceptions to Plymouth University Regulations

   (Note: Plymouth University's Academic Regulations are available on the extranet:
   https://www.plymouth.ac.uk/student-life/academic-regulations)
   None

2.5   Programme Aims

The programme will deliver:

1. Students with **knowledge and understanding** of essential facts, concepts, principles and theories related to computing and computer applications.
2. Students with a **cognitive and intellectual** approach directly related to recognising and analysing criteria and specifications appropriate to specific problems, and to be able to plan strategies for their solutions.
3. Students with **key transferable skills** including team working, leadership, collaboration and communication, to identify problems by planning effectively to meet desired outcomes even when situations and priorities change.
4. Students with a wide range of skills for **employability and continuous personal development** to become effective in the workplace, to benefit themselves, their employer and the local and wider economy to enhance long-term employment prospects.
5. Students with **practical skills** where they can operate autonomously in situations of varying complexity and predictability with the ability to specify, design, construct and evaluate reliable, secure and useable computer-based systems.

2.6   Programme Intended Learning Outcomes (ILO)

By the end of this programme the student will be able to:

ILO1: Understand the fundamentals facts, concepts, principles and theories relating to computing and computer applications, and apply these to solve a variety of real world problems whilst appreciating legal regulatory, professional, financial and ethical responsibilities.

ILO2: Recognise and analyse criteria and specifications appropriate to specific problems, and plan strategies for their solution that follow design patterns in line with quality standards and user interface conventions, and demonstrate the ability to critically evaluate systems.

ILO3: Meet desired outcomes in the implementation of computer systems by planning and managing time and resources effectively, communicating with clarity and working both autonomously and as part of a team.

ILO4: Understand the ever-changing nature of computing, and the role of continuous personal development in maintaining status as a cutting-edge computing professional.

ILO5: Demonstrate initiative and responsibility to make professional, ethical and accurate judgements based upon changing or incomplete conditions with the ability to show innovation and creativity to overcome barriers, problems and challenges.

ILO6: Specify, design and construct reliable, secure and usable computer-based systems using contemporary construction tools and techniques and present these systems with confidence, clarity and professionalism to employees and clients.

2.7   Distinctive Features

- The programme is delivered at South Devon College, which was recently reviewed as part of the Quality Assurance Agency Review of Higher Education and received two commendations.
- Students benefit from having access to support from experienced tutors, who ensure their knowledge is continually up to date through a programme of professional development.
- Access for HE students to the University Centre, which includes the HE LRC and dedicated learning space.
- This course is taught in various computer labs, which provide access to current equipment including the latest industry-standard software from proprietary and Open Source packages.
- The institution is a recognised Cisco Academy, and Cisco material is embedded into the networking module content.
- Strong links with local industry leaders in the hi-tech sector to promote opportunities for work-based experience.
- Diverse assessment methods provide learners the opportunity to demonstrate their abilities and reach their full potential, in different environments. The low staff-to-student ratio means smaller groups, allowing for more one-to-one contact and support.
- Relaxed and informal learning environment with wide variety of teaching styles.
- Incorporates a substantial element of practical work and production-based work (i.e. the production of an end product which does something useful – or fun!). We promote learning through practice and doing.
- The course and its content is 'agile by design' to be able to meet the ever changing Computing industry and associated trends.
- Our Foundation Degree is aligned to the Key Cyber Security Principles and Learning outcomes as recommended by the CPHC (Council of Professors and Heads of Computing).

2.8   Student numbers

The following provides information that should be considered nominal, and therefore not absolutely rigid, but is of value to guide assurance of the quality of the student experience, functional issues around enabling progression opportunities to occur and staffing and resource planning:

Minimum student numbers per stage = 8
Target student numbers per stage = 16
Maximum student numbers per stage = 16 per group

2.9 Progression Route(s)

Students who successfully complete the FdSc may progress to the following;

- BSc (Hons) Computer Science Level 6 at University of Plymouth
- BSc (Hons) Computer Science (Cyber Security) Level 6 at University of Plymouth
- BSc (Hons) Computer Science (Software Engineering) Level 6 at University of Plymouth

Further, depending on the grades, students may be able to progress onto different stages of related degree programmes (e.g. Games Development, Cyber Security etc.)

The contribution of marks from prior levels of study to the progression award is governed by University regulations.

2.10 Admissions Criteria

Qualification(s) Required for Entry to this Programme:	Details:
Level 2: **Key Skills requirement / Higher Level Diploma:** **and/or** **GCSEs at Level 4 or above:**	Functional Skills Level 2 English and Maths and/or 5 subjects (preferred), to include maths, English
Level 3: at least one of the following: **AS/A Levels** **Advanced Level Diploma:** **BTEC National Certificate/Diploma:** **VDA: AGNVQ, AVCE, AVS:** **Access to HE or Year 0 provision:** **International Baccalaureate:** **Irish / Scottish Highers / Advanced Highers:**	48 UCAS points from a relevant subject area that covers topics such as networking, computer hardware, programming and web technologies.
Work Experience:	May be taken into account for mature students, if relevant to the programme of study. Topics such as programming and web technologies are critical. Consideration for approval is at the discretion of the institution and the evidence provided and is on an individual basis.
Other HE qualifications / non-standard awards or experiences:	Computing relevant (Media, digital etc.) qualifications will be taken into account and will be considered on an individual basis.
APEL / APCL[1] possibilities:	Any application for APEL/APCL will be considered under Plymouth University regulations.
Interview / Portfolio requirements:	Interviews maybe required depending on previous qualifications and industry experience

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[1] Accredited Prior Experiential Learning and Accredited Prior Certificated Learning

Independent Safeguarding Agency (ISA) / Disclosure and Barring Service (DBS) clearance required:	This may be necessary as part of risk assessment in some situations. This will be dealt with on an individual basis.

2.11   Academic standards and quality enhancement

The Programme Leader/Manager (or other descriptor) leads the Programme Committee in the following of Plymouth University's annual programme monitoring process (APM), as titled at the time of approval. APM culminates in the production, maintenance and employment of a programme level Action Plan, which evidences appropriate management of the programme in terms of quality and standards. Any formally agreed change to this process will continue to be followed by the Programme Leader/Manager (or other descriptor) and their Programme Committee.

Elements of this process include engaging with stakeholders. For this definitive document it is important to define:
Subject External Examiner(s): All modules are parented by this programme and therefore covered by this programme's external examiner.

Additional stakeholders specific to this programme: Student representatives, from each stage of the degree, are engaged as part of the quality process and contribute to both the annual programme monitoring (APM) and the programme committee meeting (PCM). Employers are engaged through guest speaking and workplace visits. Employers are invited to attend the yearly research showcase and employers are invited to present their business and technologies to the students during this event. Regular sector focus groups meetings are held within computing to support developments and quality of the programme.

2.12 Programme Structure

			Level 4 – Full Time		
Module Code	Module Title	Credits	Year of Delivery	Semester/Term of Delivery	Core/Optional
SOUD1412	Client-Side Web Development	20	1	All Year	Core
SOUD1413	Database: Analysis, Design and Development	20	1	All Year	Core
SOUD1414	Computer Systems infrastructure	20	1	All Year	Core
SOUD1505	Fundamentals of Computer Networks	20	1	All Year	Core
SOUD1506	Programming Concepts	20	1	All Year	Core
SOUD1507	Introduction to Computer Security	20	1	All Year	Core

Level 5 – Full time					
Module Code	Module Title	Credits	Year of Delivery	Semester/Term of Delivery	Core/Optional
SOUD2462	Employability and Professional Development	20	2	All Year	Core
SOUD2463	Secure Application Development	20	2	All Year	Core
SOUD2364	Object Oriented Programming (OOP)	20	2	Semester 1	Core
SOUD2366	Advanced Project	20	2	Semester 2	Core
Plus, two optional modules chosen at the discretion of the programme team.					
SOUD2367	Application Development for Embedded Operating Systems	20	2	Semester 2	Optional*
SOUD2368	Enterprise Networks	20	2	All Year	Optional*
SOUD2369	Fundamental of Embedded Systems	20	2	All Year	Optional*
SOUD2370	Cyber Security Forensics	20	2	All Year	Optional*
SOUD2371	Immersive Technologies	20	2	All Year	Optional*
SOUD2372	User-Centred Interface Design	20	2	All Year	Optional*

*Note optional modules are chosen and run at the discretion of the programme team. Students will be notified of the option modules prior to stage 2 commencing.

Level 4 (Part Time)					
Module Code	Module Title	Credits	Year of Delivery	Semester/Term of Delivery	Core/Optional
SOUD1412	Client-Side Web Development	20	2	All Year	Core
SOUD1413	Database: Analysis, Design and Development	20	1	All Year	Core
SOUD1414	Computer Systems infrastructure	20	1	All Year	Core
SOUD1505	Fundamentals of Computer Networks	20	2	All Year	Core
SOUD1506	Programming Concepts	20	1	All Year	Core
SOUD1507	Introduction to Computer Security	20	2	All Year	Core

Level 5 – (Part time)					
Module Code	Module Title	Credits	Year of Delivery	Semester/Term of Delivery	Core/Optional
SOUD2462	Employability and Professional Development	20	2	All Year	Core
SOUD2463	Secure Application Development	20	3	Semester 1	Core
SOUD2364	Object Oriented Programming (OOP)	20	2	Semester 1	Core
SOUD2366	Advanced Project	20	3	Semester 2	Core
Plus two optional modules chosen at the discretion of the programme team.					
SOUD2367	Application Development for Embedded Operating Systems	20	3	Semester 2	Optional*
SOUD2368	Enterprise Networks	20	3	All Year	Optional*
SOUD2369	Fundamental of Embedded Systems	20	3	All Year	Optional*
SOUD2370	Cyber Security Forensics	20	3	All Year	Optional*
SOUD2371	Immersive Technologies	20	3	All Year	Optional*
SOUD2372	User-Centred Interface Design	20	3	All Year	Optional*

*Note optional modules are chosen and run at the discretion of the programme team. Students will be notified of the option modules prior to stage 2 commencing.

Level 4 HNC Computing Full time					
Module Code	Module Title	Credits	Year of Delivery	Semester/Term of Delivery	Core/Optional
SOUD1507	Introduction to Computer Security	20	1	All Year	Core
SOUD1412	Client-Side Web Development	20	1	Semester 2	Core
SOUD1413	Database: Analysis, Design and Development	20	1	Semester 1	Core
SOUD1414	Computer Systems infrastructure	20	1	All Year	Core
SOUD1505	Fundamentals of Computer Networks	20	1	All Year	Core
SOUD1506	Programming Concepts	20	1	All Year	Core

		Level 4 HNC Computing Part time			
Module Code	Module Title	Credits	Year of Delivery	Semester/Term of Delivery	Core/Optional
SOUD1507	Introduction to Computer Security	20	2	All Year	Core
SOUD1412	Client-Side Web Development	20	1	All Year	Core
SOUD1413	Database: Analysis, Design and Development	20	1	All Year	Core
SOUD1414	Computer Systems infrastructure	20	2	Semester 2	Core
SOUD1505	Fundamentals of Computer Networks	20	1	All Year	Core
SOUD1506	Programming Concepts	20	1	Semester 1	Core

2.13 Explanation and Mapping of Learning Outcomes, Teaching & Learning and Assessment

Developing graduate attributes and skills, at any level of HE, is dependent on the clarity of strategies and methods for identifying the attributes and skills relevant to the programme and where and how these are operationalized. The interrelated factors of Teaching, Learning and Assessment and how these are inclusive in nature, are fundamentally significant to these strategies and methods, as are where and how these are specifically distributed within the programme.

Ordered by graduate attributes and skills, the following table provides a map of the above, plus an exposition to describe and explain the ideas and strategy of each. Therefore, subsequent to the initial completion for approval, maintenance of this table as and when programme structure changes occur is also important:

FHEQ level: 4					
Definitions of Graduate Attributes and Skills Relevant to this Programme	**Teaching and Learning Strategy / Methods**	**Programme Aims**	**Programme intended Learning Outcomes**	**Range of Assessments**	**Related Core Modules**
Knowledge / Understanding: Framework for HE Quals (FHEQ) (2015) 4.10 (Level 4) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) By the end of this level of this programme the students will be able to demonstrate for a threshold pass: Knowledge and understanding: demonstrate knowledge and understanding of essential facts, concepts, principles and theories relating to computing and computer applications as appropriate to the programme of study. Modelling: use such knowledge and understanding in the modelling and design of computer-based systems for the purposes of comprehension, communication, prediction and the understanding of trade-offs.	Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning	1	ILO1	Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output	SOUD1413 SOUD1414 SOUD1505
An explanation for embedding Knowledge and Understanding through Teaching & Learning and Assessment at this level of the programme: Knowledge and understanding is a keen aspect of computing that will enable employment in the computing industry. At this level knowledge and understanding will be formatively challenged where appropriate in a practical and fun way during lectures, seminars and lab sessions. Delivery of the essential facts and concepts will be part of					

lectures, seminars, labs sessions and during assessment. Students are expected at this level to be able to make sound judgements towards interpretation and evaluation of theory and concepts. Summative assessment of knowledge and understanding of the core concepts and fundamentals will be by in-class test or exam and applied computing (programming and networking for example) by demonstration and observation.

Cognitive and Intellectual Skills:					
Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) By the end of this level of this programme the students will be able to demonstrate for a threshold pass: (3.3) Computational thinking including its relevance to everyday life. Requirements, practical constraints and computer-based systems (and this includes computer systems, information, security, embedded, and distributed systems) in their context: recognise and analyse criteria and specifications appropriate to specific problems, and plan strategies for their solutions. Critical evaluation and testing: analyse the extent to which a computer-based system meets the criteria defined for its current use and future development. Methods and tools: deploy appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer-based systems. Professional considerations: recognise the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology and be guided by the adoption of appropriate professional, ethical and legal practices.	Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning	2	ILO2	Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output	SOUD1411 SOUD1413 SOUD1414

An explanation for embedding Cognitive and Intellectual Skills through Teaching & Learning and Assessment at this level of the programme:
A key element of success at this level is the transition between FE learning and HE learning. Computation is evident in everyday life and the teaching and learning approach will utilise this as a method to develop student's cognitive skills at this level. Teaching and learning will focus on how to apply the required understanding of computing fundamentals

to computing problems. Summative assessment will examine their ability to analyse problems, design, implement and document solutions, through a combination of Coursework and Practical Assessments.					
Key Transferable Skills: Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) By the end of this level of this programme the students will be able to demonstrate for a threshold pass: Framework for HE Quals (FHEQ) (2015) Communicate the results of their study/work accurately and reliably, and with structured and coherent arguments The qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility. Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) (3.6) Intellectual skills: critical thinking; making a case; numeracy and literacy; information literacy. The ability to construct well-argued and grammatically correct documents. The ability to locate and retrieve relevant ideas, and ensure these are correctly and accurately referenced and attributed. (3.7) Self-management: self-awareness and reflection; goal setting and action planning; independence and adaptability; acting on initiative; innovation and creativity. The ability to work unsupervised, plan effectively and meet deadlines, and respond readily to changing situations and priorities. (3.8) Interaction: reflection and communication: the ability to succinctly present rational and reasoned arguments that address a given problem or opportunity, to a range of audiences (orally, electronically or in writing).	Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning	3	ILO3	Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output	SOUD1411 SOUD1412 SOUD1414

(3.9) Team working and management: the ability to recognise and make best use of the skills and knowledge of individuals to collaborate. To be able to identify problems and desired outcomes and negotiate to mutually acceptable conclusions. To understand the role of a leader in setting direction and taking responsibility for actions and decisions. (3.10) Contextual awareness: the ability to understand and meet the needs of individuals, business and the community, and to understand how workplaces and organisations are governed.					

An explanation for embedding Key Transferable Skills through Teaching & Learning and Assessment at this level of the programme:
Students are introduced to transferable skills from the beginning of the programme, during the Employability and Professional Development module, where they will evidence these skills during work experience engagements. Essential skills such as team working, written reports, presentations and reflective accounts are all embedded during this time. At this level students are introduced to these skills throughout the programme and are assessed through a variety of Coursework and Practical Assessments. There are opportunities for students to enhance and develop these skills as this stage of study progresses. The hands-on approach to learning in a practical way will enable students to develop their skills which will include problem solving, organising working to deadlines, management and leadership, motivation, making decisions and research.

Employment Related Skills:
Framework for HE Quals (FHEQ) (2015)
Foundation Degree Qualification Benchmark (FDQB) (2014)
QAA Subject Benchmark for Computing (2016)

| By the end of this level of this programme the students will be able to demonstrate for a threshold pass: Framework for HE Quals (FHEQ) (2015) Undertake further training and develop new skills within a structured and managed environment. The qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility. Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) (3.5) A wide range of generic skills to ensure they become effective in the workplace, to the benefit of themselves, their employer and the wider economy. | Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning | 4 | ILO4 & ILO5 | Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output | SOUD1411 SOUD1413 SOUD1505 SOUD1506 |

Develop of generic skills, and are able to evidence and demonstrate such skills, will gain significant advantage when seeking employment.					

Practical Skills: Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) By the end of this level of this programme the students will be able to demonstrate for a threshold pass: QAA Subject Benchmark for Computing (2016) (3.4) The ability to specify, design and construct reliable, secure and usable computer-based systems. The ability to evaluate systems in terms of quality attributes and possible trade-offs presented within the given problem. The ability to plan and manage projects to deliver computing systems within constraints of requirements, timescale and budget. The ability to recognise any risks and safety aspects that may be involved in the deployment of computing systems within a given context. The ability to deploy effectively the tools used for the construction and documentation of computer applications, with particular emphasis on understanding the whole process involved in the effective deployment of computers to solve practical problems.	Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning	5	ILO6	Practical Skills Assessment, Demonstration, Oral Assessment and Presentation, Portfolio and Report.	SOUD14 12 SOUD14 13 SOUD14 14 SOUD15 05 SOUD15 06

The ability to critically evaluate and analyse complex problems, including those with incomplete information, and devise appropriate solutions.					

It is obvious that computing is a heavily practical field. Through sector focus events it's also evident that employers look for knowledge and understanding of core concepts and fundamentals, the wider picture is they look for competency in an individual to carry out specific tasks. These fundamental practical tasks enable a student to embed more naturally in the industry. The learning curve is reduced greatly by being exposed to industry standard practical exercises and experiences. At this level the teaching and learning of modules is very much parallel with this and challenges the learner to be responsive to the practical fundamentals. Assessment methods such as Practical Skills Assessment and Demonstration allow for confirmation and examination of these fundamental skills in areas such as software development, computer and networked systems.

FHEQ level: 5					
Definitions of Graduate Attributes and Skills Relevant to this Programme	**Teaching and Learning Strategy / Methods**	**Programme Aims**	**Programme intended Learning Outcomes**	**Range of Assessments**	**Related Core Modules**
Knowledge / Understanding: Framework for HE Quals (FHEQ) (2015) 4.12 (Level 5) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) By the end of this level of this programme the students will be able to demonstrate for a threshold pass: Knowledge and understanding: demonstrate knowledge and understanding of essential facts, concepts, principles and theories relating to computing and computer applications as appropriate to the programme of study. Modelling: use such knowledge and understanding in the modelling and design of computer-based systems for the purposes of comprehension, communication, prediction and the understanding of trade-offs.	Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning	1	ILO1	Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output	SOUD2364 SOUD1507 SOUD2368 SOUD2370
An explanation for embedding Knowledge and Understanding through Teaching & Learning and Assessment at this level of the programme:					

Knowledge and understanding is a keen aspect of computing that will enable employment in the computing industry. At this level critical knowledge and understanding is key and will be formatively challenged where appropriate in a practical and fun way during lectures, seminars and lab sessions. Delivery of the critical facts and concepts will be part of lectures, seminars, labs sessions and during assessment. Students are expected at this level to be able to understand the limits of their knowledge, and how this influences analyses and interpretations based on that knowledge. This will enable them to take the appropriate approach when solving various problems. Summative assessment of knowledge and understanding of the critical concepts and fundamentals will be by in-class test or exam and applied computing (programming and networking for example) by demonstration and observation.

Cognitive and Intellectual Skills: Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) By the end of this level of this programme the students will be able to demonstrate for a threshold pass: (3.3) Computational thinking including its relevance to everyday life. Requirements, practical constraints and computer-based systems (and this includes computer systems, information, security, embedded, and distributed systems) in their context: recognise and analyse criteria and specifications appropriate to specific problems, and plan strategies for their solutions. Critical evaluation and testing: analyse the extent to which a computer-based system meets the criteria defined for its current use and future development. Methods and tools: deploy appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer-based systems. Professional considerations: recognise the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology and be guided by the adoption of appropriate professional, ethical and legal practices.	Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning	2	ILO2	Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output	SOUD2463 SOUD1507 SOUD2366 SOUD2370
An explanation for embedding Cognitive and Intellectual Skills through Teaching & Learning and Assessment at this level of the programme:					

After successful completion of level 4 students will be familiar with applying solutions to define problems. This leave of study will build upon this and develop the student's ability to apply underlying concepts and principles outside the context in which they were first studied, including, where appropriate, the application of those principles in an employment context. Summative assessment will examine their ability to analyse problems, design, implement and critically evaluate solutions that may extend the original context, through a combination of Coursework and Practical Assessments.

Key Transferable Skills:					
Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) By the end of this level of this programme the students will be able to demonstrate for a threshold pass: Framework for HE Quals (FHEQ) (2015) Communicate the results of their study/work accurately and reliably, and with structured and coherent arguments The qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility. Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) (3.6) Intellectual skills: critical thinking; making a case; numeracy and literacy; information literacy. The ability to construct well-argued and grammatically correct documents. The ability to locate and retrieve relevant ideas, and ensure these are correctly and accurately referenced and attributed. (3.7) Self-management: self-awareness and reflection; goal setting and action planning; independence and adaptability; acting on initiative; innovation and creativity. The ability to work unsupervised, plan effectively and meet deadlines, and respond readily to changing situations and priorities. (3.8) Interaction: reflection and communication: the ability to succinctly present rational and reasoned arguments that address a given problem or	Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning	3	ILO3	Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output	SOUD2463 SOUD1507 SOUD2366 SOUD2367

opportunity, to a range of audiences (orally, electronically or in writing). (3.9) Team working and management: the ability to recognise and make best use of the skills and knowledge of individuals to collaborate. To be able to identify problems and desired outcomes and negotiate to mutually acceptable conclusions. To understand the role of a leader in setting direction and taking responsibility for actions and decisions. (3.10) Contextual awareness: the ability to understand and meet the needs of individuals, business and the community, and to understand how workplaces and organisations are governed.					

An explanation for embedding Key Transferable Skills through Teaching & Learning and Assessment at this level of the programme:
At this level students will continue to be exposed to transferable skills and the development of these. The focus will be upon the student's ability to effectively communicate information, arguments and analysis in a variety of forms to specialist and non-specialist audiences and deploy key techniques of the discipline effectively. The practical approach to learning will enable students to develop their skills which will include problem solving, organising working to deadlines, management and leadership, motivation, making decisions, research and the ability to effectively communicate solutions to problems to defined audiences.

Employment Related Skills: Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) By the end of this level of this programme the students will be able to demonstrate for a threshold pass: Framework for HE Quals (FHEQ) (2015) Undertake further training and develop new skills within a structured and managed environment. The qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility. Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) (3.5) A wide range of generic skills to ensure they become effective in the workplace, to the benefit of themselves, their employer and the wider economy.	Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning	4	ILO4 & 5	Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output	SOUD1507 SOUD2366 SOUD2367

Develop of generic skills, and are able to evidence and demonstrate such skills, will gain significant advantage when seeking employment.					
An explanation for embedding Employment Related Skills through Teaching & Learning and Assessment at this level of the programme: This level follows a similar route to level 4 where students will be exposed to vocational content that includes, but not limited to; software development platforms and various hardware and networking systems. The continuation of the use of real world problems in assessment will persist to contribute toward preparedness for employment. Students will be expected to appreciate, but also where appropriate; undertake further training, develop existing skills and acquire new competences that will enable them to assume significant personal responsibility and key decision making within organisations. Guest speakers are utilised where appropriate and industry visits are organised. Key skills for employability are built upon at this level, allowing learners to further develop and realise long term goals and individual targets for progression at and beyond Level 5, 6 and into industry.					
Practical Skills: Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016) By the end of this level of this programme the students will be able to demonstrate for a threshold pass: QAA Subject Benchmark for Computing (2016) (3.4) The ability to specify, design and construct reliable, secure and usable computer-based systems. The ability to evaluate systems in terms of quality attributes and possible trade-offs presented within the given problem. The ability to plan and manage projects to deliver computing systems within constraints of requirements, timescale and budget. The ability to recognise any risks and safety aspects that may be involved in the deployment of computing systems within a given context. The ability to deploy effectively the tools used for the construction and documentation of computer applications, with particular emphasis on understanding the whole process involved in the effective deployment of computers to solve practical problems.	Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning	5	ILO6	Practical Skills Assessment, Demonstration, Oral Assessment and Presentation, Portfolio and Report.	SOUD2463 SOUD2364 SOUD2367

The ability to critically evaluate and analyse complex problems, including those with incomplete information, and devise appropriate solutions.					

An explanation for embedding Practical Skills through Teaching & Learning and Assessment at this level of the programme:
The students should possess the core ability to work effectively in a practical environment, applying the core concepts and fundamental knowledge and understanding by the time they reach this level of study. This level builds upon these core skills and through the development of existing skills and acquiring new competences the student will be able to take more responsibility for their direction in the practical environment allowing for a more autonomous approach. Assessment methods such as Practical Skills Assessment and Demonstration allow for confirmation and examination of these developed and acquired skills in areas such as software development, computer and networked systems.

2.14 Work Based/Related Learning

WBL is an essential element of Foundation Degrees and therefore needs to be detailed here. However, for all types of HE programmes there should be an element of employability focus through, at least, Work Related Learning, and therefore the following is applicable for all:

FHEQ level: 4					
WBL/WRL Activity:	**Logistics**	**Prog Aim**	**Prog Intended LO**	**Range of Assessments**	**Related Core Module(s)**
WRL – Real world or realistic scenarios	Students have to design, implement and test solutions for real world problems or realistic vocational scenarios.	2,3,5	ILO2-6	Practical Skills Assessment, Demonstration, Oral Assessment and Presentation, Portfolio and Report.	SOUD1412 SOUD1413 SOUD1505 SOUD1506
WBL – Module dedicated to WBL	Students will organise, ideally more than one, work experience location. Utilise computing apprenticeship training officer for support.	3 & 4	ILO3 & 4	Practical Skills Assessment, Demonstration, Oral Assessment and Presentation, Portfolio and Report.	SOUD2426
WRL - Guest speakers and industry visits	Continue to develop and maintain links with industry to provide guest speaker opportunities	4	ILO4	Practical Skills Assessment, Demonstration, Oral Assessment and Presentation, Portfolio and Report.	Opportunity for all
An explanation of this map: Work based learning is a core element of this programme. Module SOUD2462 is dedicated to the awareness of transferrable skills and employability. Students will be expected to evidence a number of hours of work experience, for which they will reflect upon to improve and inform their future practice. Work related learning will be integral to the programme where current software development platforms are utilised alongside modern hardware and networking equipment parallel with this is the context to which assessment is driven. Where appropriate, real world problems are sourced from employers or problems that learners would face in the real world are identified and solutions are formed for these problems. Guest speakers are utilised where appropriate and industry visits are organised.					

		FHEQ level: 5			
WBL/WRL Activity:	**Logistics**	**Prog Aim**	**Prog Intended LO**	**Range of Assessments**	**Related Core Module(s)**
WRL – Real world or realistic scenarios.	Students have to design, implement, test and evaluate solutions for real world problems or realistic vocational scenarios.	2,3,5	ILO2-6	Practical Skills Assessment, Demonstration, Oral Assessment and Presentation, Portfolio and Report.	SOUD2463 SOUD2367
WRL – Advanced Project	Students are encouraged to explore local industry for a real problem that needs solving.	3,4	ILO3 & 4	Practical Skills Assessment, Demonstration, Oral Assessment and Presentation, Portfolio and Report.	SOUD2366
WRL – Investigation of security measures	Students are encouraged to explore the security measures of a local business	3,4	ILO3 & 4	Practical Skills Assessment, Demonstration, Oral Assessment and Presentation, Portfolio and Report.	SOUD1507
An explanation of this map: Work related learning will be integral to the programme where students will be exposed to vocational content that includes, but not limited to; software development platforms and various hardware and networking systems. The use of real world problems in assessment will contribute toward preparedness for employment. Students will be expected to appreciate, but also where appropriate; undertake further training, develop existing skills and acquire new competences that will enable them to assume significant personal responsibility and key decision making within organisations. Guest speakers are utilised where appropriate and industry visits are organised. Key skills for employability are built upon at this level, allowing learners to further develop and realise long term goals and individual targets for progression at and beyond Level 5, 6 and into industry.					

3. Module Records

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.*

MODULE CODE:	SOUD1412	MODULE TITLE:	Client-Side Web Development

CREDITS: 20	FHEQ Level: 4	JACS CODE: I150

PRE-REQUISITES: None	CO-REQUISITES: None	COMPENSATABLE: YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module provides an insight into the guidelines and considerations for developing user-centred and interactive websites. This module explores the vital design concepts and guidelines in order to allow the student to design, implement, test, review and evaluate a website that meets the strict needs of current user requirements.

ELEMENTS OF ASSESSMENT *Use HESA KIS definitions]*

COURSEWORK	
C1 (Coursework)	100%

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Computing
Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To discuss design considerations when meeting requirements and creating websites
- To use industry methods and tools to design, implement and test a website for defined user requirements
- To be able to review and evaluate an interactive website

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the learner will be expected to be able to:
1. Design a website to meet defined user requirements
2. Implement webpages that are enhanced by client-side scripts
3. Test a website using appropriate testing procedures
4. Review a website in terms of design considerations, meeting user requirements and recommending future improvements

DATE OF APPROVAL:	05/2016	FACULTY/OFFICE:	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016.	SCHOOL/PARTNER:	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	TERM/SEMESTER:	All Year

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: **2023/24**	NATIONAL COST CENTRE: **121**

MODULE LEADER: **Stephen Levenson**	OTHER MODULE STAFF: **as necessary**

SUMMARY of MODULE CONTENT

Discuss guidelines and considerations needing to be adopted when developing websites, such as; use of appropriate design concepts, Search Engine Optimisation (SEO), functionality across browsers and devices, compliance with relevant legalisation.

Design an interactive website to meet given requirements using appropriate tools/methodologies including; the purpose of the website, including how it will meet any organisational objectives and potential types of users of the website.

Creation of websites enhanced by client-side scripts such as; use of current HTML5, CSS3, JavaScript languages.

Test a website using appropriate testing procedures including; design and implement appropriate test plan\strategy, utilising testing tools and detailing expected and actual results.

Review a website in terms of meeting user requirements and recommend improvements including; an evaluation of the site including client & user feedback and evaluation against web frameworks

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities, workshops and tutorials	60	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Guided independent study	140	Learner centred support, recommended reading, extension tasks
Total	**200**	

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	A1 – Design and justify choices for a website. A2 - Website development, testing and review.	25% 75% Total = 100%	LO1 Design a website from initial user requirements. Create and justify these designs. LO2, LO3 & LO4 Create a website using Agile principles, implement testing methods and conduct final review.

Updated by: Stephen Levenson	Date: 24/06/2022	Approved by: Conrad Saunders	Date: 24/06/2022

Recommended Texts and Sources:
Saternos, Casimir. Client-Server Web Apps with JavaScript and Java: Sebastopol, CA: O'Reilly Media, Inc.
Duckett, Jon. Web Design with HTML, CSS, JavaScript and jQuery Set. Indianapolis: John Wiley and Sons:
http://www.webreference.com/html/tutorial16/index.html
https://www.w3.org/TR/WD-script-970314
http://www.tutorialspoint.com/internet_technologies/web_pages.htm
http://staff.cs.upt.ro/~dan/curs/awp/c3.html

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.*

MODULE CODE:	SOUD1413	MODULE TITLE:	Database: Analysis, Design and Development

CREDITS: 20	FHEQ Level: 4	JACS CODE: I240

PRE-REQUISITES: None	CO-REQUISITES: None	COMPENSATABLE: YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
An introduction to the analysis, design and implementation of a database system. This module will explore the requirements for information processing at different levels in an organisation, and introduce the analysis, design and practice of database fundamentals to implement a database solution to meet specified requirements.

ELEMENTS OF ASSESSMENT *Use HESA KIS definitions]*

WRITTEN EXAMINATION		COURSEWORK		
T1 (Test)	40%	C1 (Coursework)	60%	

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Computing
Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To demonstrate the fundamental terms and technologies behind database systems
- To introduce the analysis and design skills required to design database solutions
- To develop the skills necessary to implement a moderately complex database solution that matches specified requirements

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the learner will be expected to be able to:
1. Explain database terminology
2. Apply moderately complex database queries
3. Analyse and design a database solution to meet specific requirements
4. Implement a moderately complex database solution

DATE OF APPROVAL:	05/2016	FACULTY/OFFICE:	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016.	SCHOOL/PARTNER:	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	TERM/SEMESTER:	Semester 2

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2023/24	NATIONAL COST CENTRE: 121

MODULE LEADER: Andy Cuffe	OTHER MODULE STAFF: Steve Levenson

SUMMARY of MODULE CONTENT

Identify information needs within different functional areas of an organisation including areas such as; the need and justification of database solutions to aid in information management and processing. Methods of collating information such as: Interviews, questionnaires, observation, focus groups, investigation of documentation.

Key database terminology such as: database models e.g., relational, flat file; relational technology terminology e.g., Tables, fields, records, attributes, relationships, data types, primary and foreign keys, referential integrity, data-redundancy, data-integrity; Manipulating data e.g., select, update, delete, insert, join, union, intersection, difference etc.

Design methods such as: ERDs and DFDs e.g., describing relationships (one-to-many etc. and resolving many-to-many relationships for implementation), capturing entities, attributes and identifiers; normalisation (UNF, 1NF, 2NF and 3NF; defining the data in the data dictionary.

SQL tools e.g., Generating SQL to build databases through software such as PhpMyAdmin, MySQL Workbench, MySQL CLI to create and manage databases (Principles and uses of relational and non-relational databases)

Building and Querying databases; fundamentals of SQL such as using SQL to e.g., create tables, keys, integrity and joins. Inserting, updating, deleting and selecting data

Data structures e.g., JSON, XML, Flat file etc. Nonrelational databases, NoSQL, document based, MongoDB etc. NoSQL statements, find, insert, date, count, update, remove, stats, total, show, replace, logical operators, arithmetic operators, sort etc.

Use NoSQL Database in cohesion with Python Programming to present data in a formal way, using MatPlotLib, Pandas and Numpy.

Power Bi, consuming data from different sources, CSV, JSON, XML, etc including reports, dashboards, DAX(Data Analysis Expressions), clustering, forecasting etc

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities, Tutorials and Workshops	60	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Guided Independent Study	140	Learner centred support, recommended reading, extension tasks
Total	200	

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Written Examination	T1	In class test	Total = 100%	LO1, assessing terminology and use of queries to manipulate data
Coursework	C1	Database implementation	Total = 100%	LO2, LO3, LO4 analyse and design from a given requirement. Implement using MySQL

PLYMOUTH UNIVERSITY MODULE RECORD

Updated by: Andy Cuffe	Date: 08/06/2023	Approved by: Adrian Carlson-Hedges	Date: 08/06/2023

Recommended Texts and Sources:

Paul, DuBois. MySQL (Developer's Library). San Francisco: Pearson Education
Michael J. Hernandez. Database Design for Mere Mortals: Relational Database Design.
Michigan: Addison Wesley

Simple SQL beginners - Linked
DBMS Design - Linked
Mere Mortals Database Dev - Linked
NoSQL - Linked
PowerBI - Linked

http://dev.mysql.com/
http://www.homeandlearn.co.uk/php/php12p2.html
http://www.lynda.com/Databases-training-tutorials/1458-0.html
https://www.youtube.com/watch?v=cYmQr8yeALA

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.*

MODULE CODE:	**SOUD1414**	MODULE TITLE:	**Computer Systems Infrastructure**

CREDITS: **20**	FHEQ Level: **4**	JACS CODE: **I110**

PRE-REQUISITES: **None**	CO-REQUISITES: **None**	COMPENSATABLE: **NO**

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module introduces the students to the fundamentals of computer systems infrastructure. Students will explore contemporary computer systems and the common core architecture and digital logic that enables computation. Finally, students will progress onto the use of CLI and GUIs across different operating systems.

ELEMENTS OF ASSESSMENT *Use HESA KIS definitions]*

WRITTEN EXAMINATION		PRACTICAL		
T1 (Test)	50%	**P1** (Practical)	50%	

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Computing

Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To develop an understanding of how computer data is stored, represented and transmitted.
- To provide an understanding of the operation, interaction and control of the hardware components of computer systems
- To develop confidence in managing operating systems from CLI based environments

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the learner will be expected to be able to:
1. Explain the principle components, and the operations of a computer system
2. Apply digital logic to solve problems
3. Write programs to control computer hardware for a given requirement
4. Employ commands to manipulate operating systems

DATE OF APPROVAL:	05/2016	FACULTY/OFFICE:	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016.	SCHOOL/PARTNER:	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	TERM/SEMESTER:	All Year

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2023/24	NATIONAL COST CENTRE: 121

MODULE LEADER: Andy Cuffe	OTHER MODULE STAFF: as necessary

SUMMARY of MODULE CONTENT

Principle components and operations of a computer system including areas **such as;** processors e.g. ALU, CU, PC, cache, registers, fetch-execute cycle; motherboard components e.g. BIOS/UEFI, northbridge and southbridge, I/O devices; Memory storage e.g. Non-volatile such as HDD/SDD, drive configurations, Volatile e.g. RAM, cache; data-transmission e.g. bus width, speed, serial and parallel; models of computer systems e.g. Von Neumann model; data-representation e.g. binary, hex, octal; Digital logic including areas **such as;** logic gates e.g. AND, OR, NOT, XOR etc.; Boolean-circuits and Boolean algebra, flip-flops, registers, memory and counter implementation.

Low level programs to control computer hardware including areas **such as;** use of assembly language to manipulate processor e.g. C++ Inline ASM; investigation into relevant instruction sets, opcodes and operands; use of register debugger.

Use commands to manipulate operating systems including areas **such as;** file and folder navigation and management, user accounts and privileges, power management, task management (incl techniques to optimise systems performance); command Prompt for Windows O/S; terminal for Linux O/S; creation of scripts e.g. use of Powershell; use of remote CLI clients e.g. Putty, Tera Term. Implement techniques to optimise systems performance in line with defined specifications (Defrag, clean up, update drivers)

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities, Workshops and tutorials	60	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Guided independent Study	140	Learner centred support, recommended reading, extension tasks
Total	200	

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Written Examination	T1	In class test on the principal components	Total = 100%	LO1 – assessing knowledge of the principle components of computer systems
Practical	P1	Series of practical skills assessment	Total = 100%	LO2, LO3, LO4 – collection of in class practical time bound tests

Updated by: Andy Cuffe	Date: 23/06/2022	Approved by: Conrad Saunders	Date: 23/06/2022

Recommended Texts and Sources:

Upgrading and Repairing computers: 22nd Edition. Scott Mueller.
MacRae, K. (2002) Haynes Computer Manual, 2nd ed., Yeovil: Haynes
The indispensable computer hardware book. ISBN-13; 978-0201596168

http://www.raspberrypi.org/
http://uk.crucial.com/
http://en.wikipedia.org/wiki/Von_Neumann_architecture

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD.

MODULE CODE: SOUD1505   **MODULE TITLE:** Fundamentals of Computer Networks

CREDITS: 20   **FHEQ LEVEL:** 4   **HECOS CODE:** 100365 Computer Networks

PRE-REQUISITES: None   **CO-REQUISITES:** None   **COMPENSATABLE:** YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
Modern computer systems rarely operate in a standalone manner and rely upon networks to provide flexibility of additional functionality. Module introduces the underlying network standards, protocols, devices, media and security that allow networked systems to communicate. Module includes theoretical principles matched by scenarios to design, implement/configure, and troubleshoot networks.

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions] – see* *Definitions of Elements and Components of Assessment*			
T1 (Test)	40%	**C1** (Coursework)	60%

SUBJECT ASSESSMENT PANEL to which module should be linked: FdSc Computing

Professional body minimum pass mark requirement: N/A

MODULE AIMS:

- To understand the concepts of network standards, protocols, devices, media and security that allow for communication.
- To demonstrate familiarity with network addressing.
- To configure/implement networking devices with the goal of establishing communication using virtual and/or physical resources.
- To understand the use of topologies in the design and practical implementation of a network

ASSESSED LEARNING OUTCOMES:

At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	Award/ Programme Learning Outcomes contributed to
1. Explain the fundamental principles of computer networking. 2. Apply IP Addressing schemes. 3. Configure, troubleshoot and resolve common issues with network equipment. 4. Design and implement a solution to a real-world networking problem, whilst showing consideration for the security specific to networks.	ILO1, ILO3, ILO6

DATE OF APPROVAL: 16/01/2019	**FACULTY/OFFICE:** Academic Partnership
DATE OF IMPLEMENTATION: 23/09/2019	**SCHOOL/PARTNER:** South Devon College
DATE(S) OF APPROVED CHANGE: XX/XX/XXXX	**SEMESTER:** All Year

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2023/24   **NATIONAL COST CENTRE:** 121
MODULE LEADER: Conrad Saunders   **OTHER MODULE STAFF:** None

Summary of Module Content

Examine human versus network communication and see the parallels between them

Identify the impacts that networks have had on society

Investigation of network topologies and scopes including Peer to Peer and Client Server setups.

Extensive analysis of networking models such as OSI and TCP/IP including associated Protocols and Standards such as, DHCP, DNS, ARP, VLAN, ICMP and the concept of the Ethernet standard including associated cabling.

Appreciate the makeup and use of addressing in computing and to apply subnetting knowledge to solve problems. Implement IP Routing fundamentals and protocols.

Analysis and correction of faults on a network such as, DNS, Spanning Tree (switching loop), Bad or improper cable type, Port configuration, VLAN assignment, Wrong subnet mask, Wrong gateway and Duplicate IP address. Identifies issues quickly, investigates and solves complex problems and applies appropriate solutions. Ensures the true root cause of any problem is found and a solution is identified which prevents recurrence.

Examine the workings of network architecture, components, and operations of devices such as, routers, switches, firewalls and wireless access points (inc. The types of security threats to networks and IT infrastructure assets of insecure Wifi) in a small network, and appreciate common network services.

Be able to designing networks and show appreciation for choice and cost

With the use of virtual tools, build simple LANs, perform basic configurations for network cards, routers, switches and wireless access points and implement IP addressing schemes using both virtual modelling and industry level equipment.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*		
Scheduled Activities	**Hours**	**Comments/Additional Information (briefly explain activities, including formative assessment opportunities)**
Scheduled activities, Workshops, Tutorials	60	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Guided Independent Study	140	Learner centred support, recommended reading, extension tasks
Total	**200**	**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

PLYMOUTH UNIVERSITY MODULE RECORD

SUMMATIVE ASSESSMENT

Element Category	Component Name	Component Weighting
Test	Series of in class tests (x2) on the fundamentals of computer networking. LO1&2.	100%
Coursework	Report and vlog on network design, configuration and faults. LO3&4	100%

REFERRAL ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	Report on the fundamental principles of computer networking. LO1&2.	100%
Coursework	Report and vlog on network design and configuration. LO3&4	100%

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Conrad Saunders Date: 22/06/2023	**Approved by**: Adrian Carlson-Hedges Date: 23/06/2023

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD.

MODULE CODE: SOUD1506   **MODULE TITLE:** Programming Concepts

CREDITS: 20   **FHEQ LEVEL:** 4   **HECOS CODE: 100956 Programming**

PRE-REQUISITES: None   **CO-REQUISITES:** None   **COMPENSATABLE:** No

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module is intended to introduce students to programming concepts across different programming paradigms, whilst looking to embed good software engineering practice in the design, implementation and testing of moderately complex software applications.

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions] – see Definitions of Elements and Components of Assessment*			
C1 (Coursework)	70%	**P1** (Practical**)**	30%

SUBJECT ASSESSMENT PANEL to which module should be linked: FdSc Computing

Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To consolidate the students initial experiences of the use of various programming paradigms.
- To introduce the learner to the use of programming concepts within identified paradigms and recognised security design principles.
- To develop competence within an integrated development environment as a vehicle for them implementation of a software application.

ASSESSED LEARNING OUTCOMES: (additional guidance below; please refer to the Programme Specification for relevant award/ programme Learning Outcomes.

At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	Award/ Programme Learning Outcomes contributed to
1. Apply fundamental programming structures in the implementation of simple software applications 2. Design a software application, following security design principles, conforming to specified requirements 3. Implement a moderately complex software application that meets specified requirements 4. Utilise test strategies in the testing of a software application	ILO4, ILO5 & ILO6

DATE OF APPROVAL: 16/01/2019	**FACULTY/OFFICE:** Academic Partnership	
DATE OF IMPLEMENTATION 23/09/2019	**SCHOOL/PARTNER:** South Devon College	
DATE(S) OF APPROVED CHANGE: XX/XX/XXXX	**SEMESTER:** Semester 1	

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2023/24   **NATIONAL COST CENTRE:** 121
MODULE LEADER: Andy Cuffe   **OTHER MODULE STAFF:** Steve Levenson

Summary of Module Content
Fundamentals of programming languages such as; Variables e.g. variable assignment , variable scope, data-types; Control structures e.g. Ifs, Switches, Loops Functions/Methods; Data Structures e.g. Arrays, Lists; Simple applications e.g. console/CLI based applications.
Principles of algorithms, logic and data structures relevant to software development for example: arrays, stacks, queues, linked lists, trees, graphs, hash tables, sorting algorithms, searching algorithms, critical sections and race conditions.
Use of design tools such as; wireframes, object/variable dictionaries, test plans, flowcharts, pseudo-code
Implementation of an advanced software application such as; use of visual paradigms e.g. VB.NET or equivalent; use of advanced tools e.g. User Interface development tools, use of UI objects/classes, external APIs/frameworks
Implementation of security features, using data encryption methods and login features.
Test strategies such as; implementation of test plans; test logging and documentation; static/dynamic testing; black/white box testing.
Good programming practice such as; use of comments; effective use of whitespace and indentation; sensibly named variables including use of variable notation conventions e.g. camel Case.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*		
Scheduled Activities	**Hours**	**Comments/Additional Information (briefly explain activities, including formative assessment opportunities)**
Scheduled activities, Tutorials, Practical Classes & Workshops, Demonstrations and Guided Independent Study	60	Lectures to delivery content and knowledge required to support module
Guided Independent Study	140	Learner centred support, recommended reading, extension tasks
Total	**200**	**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

SUMMATIVE ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	Report (2800 words) on the creation of an application. LO2,3&4	100%

Practical	2 programming practical skills assessments (Lab tests). LO1	50% 50% Total: 100%

REFERRAL ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	Report (2800 words) on the creation of an application. LO2,3&4	100%
Coursework	2 programming practical challenges console and GUI. LO1	50% 50% Total: 100%

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Andy Cuffe Date: 23/06/2023	**Approved by**: Conrad Saunders Date: 23/06/2023

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD.

MODULE CODE: SOUD1507   **MODULE TITLE:** Introduction to Computer Security

CREDITS: 20   **FHEQ LEVEL:** 4   **HECOS CODE:** 100358 Applied Computing

PRE-REQUISITES: None   **CO-REQUISITES:** None   **COMPENSATABLE:** YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*

This module introduces the main security issues that relate specifically to both computer and networked systems. The module introduces key underlying concepts of security and common threats to systems and how they arise, and progresses to identify specific security issues and how professionals can address such issues in the design of computer and networked systems.

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions]* – see *Definitions of Elements and Components of Assessment*			
T1 (Test)	40%	**C1** (Coursework)	60%

SUBJECT ASSESSMENT PANEL to which module should be linked: FdSc Computing

Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To develop an understanding of the core Information security principles
- To introduce students to common computer and networked system threats and vulnerabilities
- To develop an understanding of hardware and software technologies related to securing both computer and network systems

ASSESSED LEARNING OUTCOMES:

At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	Award/ Programme Learning Outcomes contributed to
1. Identify common threats and vulnerabilities to computer systems. 2. Explain mechanisms that may be used to control access and authentication to systems. 3. Recognise the need for security awareness within a professional environment. 4. Demonstrate an understanding of security risks of a professional environment regarding both their computer and systems and advice on suitable remedial actions for prevention of threats.	ILO1, ILO2 & ILO5

DATE OF APPROVAL: 16/01/2019	**FACULTY/OFFICE:** Academic Partnership
DATE OF IMPLEMENTATION: 23/09/2019	**SCHOOL/PARTNER:** South Devon College
DATE(S) OF APPROVED CHANGE: XX/XX/XXXX	**SEMESTER:** All Year

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2023/24   **NATIONAL COST CENTRE:** 121
MODULE LEADER: Adrian Carlson-Hedges   **OTHER MODULE STAFF:** Conrad Saunders

Summary of Module Content

The three fundamental principles of security; availability, integrity, and confidentiality (AIC) and the business information and goals relating to the needs of these principles.

Current Legislation and how current legislation relates to or impacts occupation.

Issues relating to computer and network threats such as; denial of service, buffer overflow, back door, spoofing, password cracking, software exploitation, viruses, rootkits, worms, Trojans, spyware and adware and how these relate back to the three principles of security AIC.

Sources of threats such as; internal e.g. USB devices, BYOD, disgruntled staff, social engineering; external e.g. via the internet (software exploitation), unsecure or weak wireless access point security.

Exploring various security architecture and tools that enables the AIC principles. Understand how integrating external components changes your attack surface and promote privacy.

Current cyber security threat-scape, organisational awareness, and commitment for information security (security policy)

Understand common attack methods and applying threats using online resources such as CyberChef.

Brief introduction to forensics covering topics such as, the process of forensic investigation, preserving artefacts legislation and ACPO guidelines.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*		
Scheduled Activities	**Hours**	**Comments/Additional Information (briefly explain activities, including formative assessment opportunities)**
Scheduled activities, lab sessions and guest speakers.	60	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Self-Study	140	Learner centred support, recommended reading, extension tasks
Total	**200**	**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

SUMMATIVE ASSESSMENT

Element Category	Component Name	Component Weighting
Test	In Class test on common threats and network authentication methods. LO1&2.	100%
Coursework	Security audit report (2500words). LO3&4.	100%

REFERRAL ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework (in lieu of the original assessment)	Security audit report. (1500 words). LO1&2	100%
Coursework	Security audit report (2500words). LO3&4.	100%

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Adrian Carlson-Hedges Date: 22/06/2023	**Approved by**: Conrad Saunders Date: 22/06/2023

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD.

MODULE CODE: SOUD2463   **MODULE TITLE:** Secure Application Development

CREDITS: 20   **FHEQ LEVEL:** 5   **HECOS CODE:** 100374 Software Engineering

PRE-REQUISITES: None   **CO-REQUISITES:** None   **COMPENSATABLE:** YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module focuses on the principles of server-side web scripting and encourages the understanding of various server-side programming languages and environments to produce dynamic and secure website content. At the end of the module, students will be able to demonstrate the use of server-side scripting in website development and implement a server-scripted website based on learnt principles.

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions] – see Definitions of Elements and Components of Assessment*	
C1 (Coursework)	100%

SUBJECT ASSESSMENT PANEL to which module should be linked: FdSc Computing

Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To compare the implementation of both client-side and server-side scripting.
- To review the use of server-side scripting technologies
- To introduce the fundamental principles of server-side web scripting and to design and implement a secure, server-scripted web application

ASSESSED LEARNING OUTCOMES:
At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	Award/ Programme Learning Outcomes contributed to
1. Analyse defined requirements to design a secure server-side scripted application. 2. Implement a moderately complex server-side scripted application to defined requirements 3. Integrate a back-end data store to a server-scripted application 4. Critically evaluate the use of server-side scripting implemented in the solution, including security and recommend future improvements	ILO2, ILO3, ILO5 & ILO6

DATE OF APPROVAL: 16/01/2019	**FACULTY/OFFICE:** Academic Partnership
DATE OF IMPLEMENTATION: 23/09/2019	**SCHOOL/PARTNER:** South Devon College
DATE(S) OF APPROVED CHANGE: XX/XX/XXXX	**SEMESTER:** Semester 1

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

Items in this section must be considered annually and amended as appropriate, in conjunction with the Module Review Process. <u>Some parts of this page may be used in the KIS return and published on the extranet as a guide for prospective students.</u> Further details for current students should be provided in module guidance notes.

ACADEMIC YEAR: 2022/23
MODULE LEADER: Liam Bottomley

NATIONAL COST CENTRE: 121
OTHER MODULE STAFF: Steve Levenson

Summary of Module Content :

Introduction to unit including areas such as assessments, module content and expectations and support development environments.

Server side versus client side approaches and the limitations in terms of security, server side languages and technologies, refresher of client side practices including recommendations on suitable support client side frameworks. Methods and reasons for creating mobile based applications and justification for Kotlin language. Android development graphical user interface layouts and designs, factoring in usability.

Key design documentation considerations including areas such as usability techniques, responsive design

Language programming constructs including areas such as variables, input, output, string methods, ifs, switches, loops, functions, HTML form input

Data storage including areas such as; database terminology refresher, using PHP database drivers such as PDO, establishing connections, achieving CRUD functionality, cookies and sessions.

Supporting data-interchange languages such as JSON.

Data visualizations such as use of Google Charts drawn from database data.
Understand best practices around mobile development including using efficient concepts, commenting code, database normalisation, use of data APIs, and data hashing.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*		
Scheduled Activities	**Hours**	**Comments/Additional Information (briefly explain activities, including formative assessment opportunities)**
Scheduled activities, Tutorials, Demonstrations, Practical Classes & Workshops	45	Traditional lectures to deliver theory relevant to module with supported workshops to provide formative feedback for assessment submissions as well as supported application development time
Guided Independent study	155	Learner centred support, recommended reading, extension tasks
Total	**200**	**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

PLYMOUTH UNIVERSITY MODULE RECORD

SUMMATIVE ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	Production of design documentation based upon a requirements specification. (500 words) LO1.	25%
	Post production report of secure server-side application, database integration and evaluation. (1000 words) LO2-4.	75%
		Total: 100%

REFERRAL ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	Production of design documentation based upon a requirements specification and post production report of secure server-side application, database integration and evaluation. (1500 words) LO1-4.	100%

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Liam Bottomley Date: 23/06/2022	**Approved by**: Adrian Carlson-Hdges Date: 23/06/2022

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD.

MODULE CODE: SOUD2462   **MODULE TITLE:** Employability and Professional Development

CREDITS: 20   **FHEQ LEVEL:** 5   **HECOS CODE: 100376 Computer & Information Security**

PRE-REQUISITES: None   **CO-REQUISITES:** None   **COMPENSATABLE:** YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module enables students to experience and reflect upon real working environments with a view of improving employability. The module will enable students to develop key transferrable and employment related skills needed in the modern industry. This experience will enable students, amongst other things, to contextualise early theory into practice.

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions] – see Definitions of Elements and Components of Assessment*		
C1 (Coursework)	100%	

SUBJECT ASSESSMENT PANEL to which module should be linked: FdSc Computing

Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- Enable students to experience real working environments
- Enable students to acquire work-based knowledge and to develop their key transferable and employment related skills
- Develop students professionalism in the Computing industry
- Help students develop career choices

ASSESSED LEARNING OUTCOMES:

At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	Award/ Programme Learning Outcomes contributed to
1. Demonstrate the ability to reflectively examine own practice for strengths and weaknesses and apply this to the development of a continuing Personal Development Plan (PDP).	ILO2, ILO3, ILO4 & ILO5
2. Analyse own PDP to inform employability prospects and opportunities.	
3. Demonstrate and evidence a variety of acquired interpersonal and transferable skills	
4. Evidence self-awareness and reflection on own practice	

DATE OF APPROVAL: 16/01/2019	**FACULTY/OFFICE:** Academic Partnership
DATE OF IMPLEMENTATION: September 2020	**SCHOOL/PARTNER:** South Devon College
DATE(S) OF APPROVED CHANGE: XX/XX/XXXX	**SEMESTER:** All Year

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2022/23   **NATIONAL COST CENTRE:** 121
MODULE LEADER: Adrian Carlson-Hedges **OTHER MODULE STAFF:** Conrad Saunders

Summary of Module Content
Work based learning preparation: such as;
Development of a PDP, Identification of transferrable skills, Production of a skills audit, transcripts: maintaining and presenting transcripts including curriculum vitae and Letters of application.

Work based learning (work experience) tasks such as;
Demonstration and evidence of a variety of acquired interpersonal and transferable skills within the work place under the guidance of an employer.

Self-awareness and reflection such as;
Review of PDP, reflection upon current performance and training needs, identification of the suitability to the role(s) experienced. Review and reflection upon the demonstration of acquired interpersonal and transferable skills within the work place.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*		
Scheduled Activities	**Hours**	**Comments/Additional Information (briefly explain activities, including formative assessment opportunities)**
Scheduled activities, workshops and tutorials	45	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Agreed work experience	50	Supported work experience and collation of evidence
Guided independent study	105	Learner centred support, recommended reading, extension tasks
Total	**200**	**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

PLYMOUTH UNIVERSITY MODULE RECORD

SUMMATIVE ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	Personal Development Plan Portfolio (PDP) - contents such as skills audit, Belbin team roles, SWOT analyses etc. Evidence of work experience organisation. LO1&2. (2000 words) Reflective Log - evidence of key transferrable skills and a reflective account informing future plans. LO3&4. (2000 words)	50% 50% Total: 100%

REFERRAL ASSESSMENT

Element Category	Component Name	Component Weighting
Coursework	Personal Development Plan Portfolio (PDP) - contents such as skills audit, Belbin team roles, SWOT analyses etc. Evidence of work experience organisation. LO1&2. (2000 words) Reflective Log - evidence of key transferrable skills and a reflective account informing future plans. LO3&4. (2000 words)	50% 50% Total: 100%

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Adrian Carlson-Hedges Date: 23/06/2022	**Approved by**: Conrad Saunders Date: 23/06/2022

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.*

MODULE CODE:	SOUD2364	MODULE TITLE:	Object Oriented Programming (OOP)
CREDITS: 20		FHEQ Level: 5	JACS CODE: I322

PRE-REQUISITES: SOUD1506 Programming Concepts	CO-REQUISITES: None	COMPENSATABLE: YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module focuses on understanding the key concepts of the object-oriented paradigm. Students will apply these underlying concepts in the design, implementation and testing of moderately complex object oriented applications.

ELEMENTS OF ASSESSMENT *Use HESA KIS definitions]*

WRITTEN EXAMINATION		COURSEWORK		
T1 (Test)	30%	C1 (Coursework)	70%	

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Computing
Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To introduce and explore the key concepts of object oriented programming.
- To develop the student's skill in the design, implementation and testing of an object-oriented application to meet defined user requirements.

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the learner will be expected to be able to:
1. Explain and apply object oriented concepts and design considerations.
2. Analyse defined user requirements to design an object oriented application
3. Create a moderately complex object oriented application.
4. Critically evaluate an object oriented application.

DATE OF APPROVAL:	05/2016	FACULTY/OFFICE:	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016.	SCHOOL/PARTNER:	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	TERM/SEMESTER:	Semester 1

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2023/24	NATIONAL COST CENTRE: 121

MODULE LEADER: Andy Cuffe	OTHER MODULE STAFF: as necessary

SUMMARY of MODULE CONTENT
Key features of object-oriented programming areas **such as**: classes, objects, attributes, methods and the four pillars of OOP, encapsulation, polymorphism, inheritance and abstraction.
Design approaches for object oriented applications, **such as:** use of unified modelling language, class diagrams, use cases; pseudocode; test plans etc.
Implementation of object oriented applications through use of console and/or graphical user based interfaces.
Creation and use of test plans and test strategies to test and inform the review of object oriented applications. The test plan may be implemented during the design phase depending on methodology used (TDD)

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities, Workshops & Tutorials	45	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Guided independent study	155	Learner centred support, recommended reading, extension tasks
Total	**200**	

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Written Examination	T1	In Class test	Total = 100%	LO1 – Assessing the principles of OOP constructs and design methods.
Coursework	C1	Development report	Total = 100%	LO2, LO3, LO4 Report on the design, implement/create and evaluate an object oriented program.

Updated by: Andrew Cuffe	Date: 22/06/2023	Approved by: Conrad Saunders	Date: 22/06/2023

Recommended Texts and Sources:
Budd, T(Oct 2001) An Introduction to Object-Oriented Programming
Weisfeld, M (2013)The Object-Oriented Thought Process (Developer's Library) Paperback –
http://www.oodesign.com/
https://msdn.microsoft.com/en-us/library/dd460654.aspx

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.*

MODULE CODE:	SOUD2366	MODULE TITLE:	Advanced Project

CREDITS: 20	FHEQ Level: 5	JACS CODE: I190

PRE-REQUISITES: None	CO-REQUISITES: None	COMPENSATABLE: YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module enables students to obtain a real business problem to solve. Students will draw upon learnt subject experiences and skills gained from the course to date, to enable them to effectively plan, design, implement, test, evaluate, document and present a project of complexity.

ELEMENTS OF ASSESSMENT *Use HESA KIS definitions]*

COURSEWORK		PRACTICAL		
C1 (Coursework)	80%	P1 (Practical)	20%	

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Computing

Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To liaise with industry to obtain a real business problem
- To practice project methodologies and documentation
- To implement a project using modern techniques, platforms and gained skills

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the learner will be expected to be able to:
1. Analyse a real business problem and devise a project plan
2. Develop the project to the agreed specification and plan
3. Critically evaluate the project in line with the agreed specification and plans
4. Present findings in an appropriate format for a wider audience

DATE OF APPROVAL:	05/2016	FACULTY/OFFICE:	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016.	SCHOOL/PARTNER:	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	TERM/SEMESTER:	Semester 2
Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required			

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2023/24	**NATIONAL COST CENTRE: 121**
MODULE LEADER: Adrian Carlson-Hedges	**OTHER MODULE STAFF: Andy Cuffe**

SUMMARY of MODULE CONTENT

Introduction to module including areas such as; project expectations, assessment expectations, module expectations, support and legitimacy of business case:

Planning projects including areas such as production of a PID, including areas such as identifying a business case, functional point analysis, ethics and time management tools such as Gantt Charts

Introduction to project management including project roles and stakeholders, identifying and generating feasibility, project management standards, generating requirements specifications.

Project failures and successes including identification of risk factors through use of case studies. Identifying and managing risk factors to minimise risk

Development methodologies including analysis (similarities and differences) of traditional heavyweights versus AGILE methods and their implementation in projects. (incl. all stages of the software development life cycle (what each stage contains, including the inputs and outputs).

Interim project reporting, including project checkpoint reports.

Risk management including definition of key terms, identification of key project risks, quantification of project risks, reflection of risks relevant to own project

Showcase guidance including presentation support and creating suitable academic posters for a wider audience

Building the project summative report including role of critical evaluation and reflection in project. Identification of key report stages with formative feedback support

Supported project workshop including stakeholder support, technical feedback and support, report writing assistance, formative feedback prior to summative submissions, supported development time.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities, Tutorials, Project Supervision, Demonstrations	45	Examples such as traditional lectures, group tasks, peer learning, practical sessions and one to one support
Guided Independent Study	155	Learner centred support, recommended reading, extension tasks
Total	200	

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	Post project report	Total = 100%	LO1, LO2, LO3 Report covering the implementation of the advanced project
Practical	P1	Oral Presentation	Total = 100%	LO4 Presentation to a research showcase audience

PLYMOUTH UNIVERSITY MODULE RECORD

Updated by: Adrian Carlson-Hedges	Date: 23/06/2022	Approved by: Conrad Saunders	Date: 23/06/2022

Recommended Texts and Sources:
Books

Software Project Management by Bob Hughes and Mike Cotterell
ISBN: 978-0-07-710989-9

Planning and Implementing your Final Year Project - with Success!: A Guide for Students in Computer Science and Information Systems by Mikael Berndtsson (26 Feb 2008) ISBN: 978-1852333324

IT Project Management: On Track from Start to Finish by Joseph Phillips ISBN-13: 978-0071700436

Useful Websites

http://moodle.southdevon.ac.uk/
http://www.mindtools.com/pages/article/newPPM_85.htm
http://www.prince-officialsite.com/
http://www.dfpni.gov.uk/content_-_successful_delivery-project_initiation_document
http://www.bristol.ac.uk/ict-projects/mcroomupgrade/projectdocs/pid.pdf

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.*

MODULE CODE:	SOUD2367	MODULE TITLE:	Application development for embedded operating systems

CREDITS: 20	FHEQ Level: 5	JACS CODE: I320

PRE-REQUISITES: SOUD1506 Programming Concepts	CO-REQUISITES: N/A	COMPENSATABLE: YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module focuses on the understanding of the role of embedded operating systems in a range of devices. Students will use this understanding to investigate embedded operating system development environments and frameworks, resulting in the design, implementation, testing and presentation of an application for an embedded operating system for specified requirements.

ELEMENTS OF ASSESSMENT [*Use HESA KIS definitions*]

COURSEWORK		Practical	
C1 (Coursework)	80%	P1 (Practical)	20%

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Computing
Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To practically investigate the roles and functions of embedded operating systems
- To understand the fundamental concepts needed when developing an embedded operating systems application
- To apply and acknowledge the importance of design and test frameworks, strategies and conventions, in the implementation of an application for an embedded operating system.

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the learner will be expected to be able to:
1. Analyse given requirements to design an application for an embedded operating system
2. Implement an application for an embedded operating system using a prepared design
3. Critically evaluate an embedded operating system application
4. Present an application for an embedded operating system to an audience

DATE OF APPROVAL:	05/2016	FACULTY/OFFICE:	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016.	SCHOOL/PARTNER:	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	TERM/SEMESTER:	Semester 2
Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required			

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2023/24	**NATIONAL COST CENTRE: 121**
MODULE LEADER: Andy Cuffe	**OTHER MODULE STAFF: Steve Levenson**

SUMMARY of MODULE CONTENT

Embedded operating system platforms and frameworks such as: low-level embedded platforms e.g. Utilisation of Unity framework to distribute to operating systems and supporting frameworks such as: Android, iOS, Windows Mobile, embedded operating system platforms e.g. mobiles, tablets, smart TVs, wearables.

Design of applications including; use of supporting design tools, e.g. wireframes, object/data dictionaries, class diagrams, test plans; use of UI prototyping tools e.g. Draw.IO, Pencil, FluidUI; use of design frameworks and conventions e.g. Android / iOS native design guidelines

Implementation of application including development of an application to meet given requirements, specifying target and minimum specified platforms, adhering to responsive and flexible UI design, considering concepts of usability, learnability, accessibility etc.; implementation of external APIs to add functionality,

Test and review of application including; implementation of test plans and role of test driven development, use of empirical testing methods, testing across different platforms and framework versions, usability testing, user, client and peer feedback

Presentation of application including; installation and demonstration of working applications to potential clients and specialists; proposed gains and benefits of applications to client; identification of future versions and further work/improvements; reflection on strengths and weaknesses;

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities, Workshops and Tutorials	45	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Guided independent study	155	Learner centred support, recommended reading, extension tasks
Total	**200**	

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	Development report	Total = 100%	LO1, LO2, LO3 Report on the design, implement and evaluate an application for an embedded operating system
Practical	P1	Oral Presentation	Total = 100%	LO4 Presentation of an application to a specified audience

Updated by: Andrew Cuffe	**Date:** 23/06/2022	**Approved by:** Conrad Saunders	**Date:** 23/06/2022

Recommended Texts and Sources:

Big Nerd Ranch (2015) Android Programming The Big Nerd Ranch Guide
O'Reilly (2016) better Android: Higher Quality Apps from Design to Development
http://developer.android.com/index.html

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.*

MODULE CODE:	SOUD2368	MODULE TITLE:	Enterprise Networks

CREDITS: 20	FHEQ Level: 5	JACS CODE: I120

PRE-REQUISITES: None	CO-REQUISITES: None	COMPENSATABLE: YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
Networks are an essential part of our lives. The Internet, for example, is viewed as one of life's necessities like water, food and accommodation. This module introduces the learner to the support mechanisms needed to maintain enterprise networks and will allow for the exploration of various tools and techniques used to configure, administrate and maintain these networks.

ELEMENTS OF ASSESSMENT *Use HESA KIS definitions]*

WRITTEN EXAMINATION		PRACTICAL		
T1 (Test)	50 %	P1 (Practical)	50%	

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Computing
Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To appreciate the availability and performance of networks and its impact on our daily lives
- To introduce network management
- To explore various support mechanisms and the responsibilities surrounding these
- To configure, administrate and maintain enterprise networked systems

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the learner will be expected to be able to:
1. Analyse the underlying infrastructure of enterprise networks
2. Examine the technologies used to configure and maintain enterprise networks
3. Configure enterprise networks
4. Use tools and techniques to administrate a network

DATE OF APPROVAL:	05/2016	FACULTY/OFFICE:	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016.	SCHOOL/PARTNER:	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	TERM/SEMESTER:	All Year
Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required			

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: **2023/24**	NATIONAL COST CENTRE: **121**

MODULE LEADER: **Conrad Saunders**	OTHER MODULE STAFF:

SUMMARY of MODULE CONTENT

Protocol review: Application, Transport, Network and Datalink protocols such as DHCP, DNS, LDAP, TCP UDP, OSPF etc. protocols for fault management can be dealt with in FCAPS

Devices: Switches, routers, servers (incl. provisioning)

Services: print, web, DHCP, DNS, Active Directory

Support: Internet Service Providers (ISP), Levels of support (tiered), Helpdesk role and responsibilities and skills required. Organisational procedures to deal with recording information effectively and in line with protocols. communicate outcomes of tasks and record in line with organisational procedures and SLAs including adherence to good customer service standards. Record task details whether face-to-face, remote or in writing in line with ogranisational requirements. Organise and prioritise clients/stakeholders' requests in line with SLAs and organisation processes.

Cloud Computing: cloud characteristics and service attributes, risks and benefits of implementing cloud computing (The types of security threats to cloud networks and IT infrastructure assets), Cloud deployment models (IaaS, PaaS, SaaS, BPaas)

Pro-active vs reactive management - Management tasks, Approaches to change management (compliance to this), helpdesk roles (Apply the appropriate tools and techniques to gather information to troubleshoot issues and isolate, repair or escalate faults), ISO standards, FCAPS; Fault process and tools (SNMP, Tracert, ping)**;** use of proactive tools such as LanMon and PTRG (to monitor and record systems performance); Monitor, identify and implement required maintenance procedures.

Virtualisation – types such as   Application virtualisation, Desktop virtualisation, User virtualisation, Storage virtualisation and Hardware virtualisation and the benefits of these.

Installation and configuration of enterprise networks such as

- **Hyper-V** – Virtual machines and provisioning
- **Installation and configuration** of services such as, DHCP, DNS, AD and HTTP services (IIS / Linux Apache).
- **Active Directory**
  - o Manage local and remote users and groups
  - o Group Policies and roaming profiles
- **Automation:** Powershell to automate configuration and management of networks.
- **Cloud Computing** – Azure fundamentals

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities Workshops	45	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Guided Independent study	155	Learner centred support, recommended reading, extension tasks
Total	200	

PLYMOUTH UNIVERSITY MODULE RECORD

Category	Element	Component Name	Component Weighting	Comments include links to learning objectives
Written Examination	T1	In class test	Total = 100%	LO1 & LO2 – in-class test on network infrastructure and technologies.
Practical	P1	Series of practical skills assessment	Total = 100%	LO3 & LO4 Series of in class practical skills assessments

Updated by: Conrad Saunders	Date: 23/06/2022	Approved by: Adrian Carlson-Hedges	Date: 23/06/2022

Recommended Texts and Sources:
Computer Networks (2013) Tanenbaum, A & Wetherall, D: Pearson
Cisco Press (2014) Routing and Switching Essentials Companion Guide: Cisco Networking Academy
Cloud Computing: Concepts, Technology & Architecture Paperback (2021): Independently published
Windows Server 2019 & PowerShell All-in-One For Dummies (newoutlook.it)
https://msdn.microsoft.com/en-us/library/bb742424.aspx
https://msdn.microsoft.com/en-us/library/bb742437.aspx
Computer Networking : Principles,Protocols and Practice — CNP3www 2014 documentation (computer-networking.info)
https://docs.microsoft.com/en-us/windows-server/virtualization/hyper-v/hyper-v-technology-overview

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.*

MODULE CODE:	**SOUD 2369**	**MODULE TITLE:**	**Fundamentals of Embedded Systems**

CREDITS: 20	**FHEQ Level: Level 5**	**JACS CODE: I100**

PRE-REQUISITES: None	**CO-REQUISITES: None**	**COMPENSATABLE: YES**

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module introduces the fundamentals of embedded systems, including the use of embedded systems to practically explore the implementation of open and closed loop control systems. The investigation into, and use of associated control system hardware, components and software constructs will ultimately allow the student to develop a control system of moderate complexity.

ELEMENTS OF ASSESSMENT [*Use HESA KIS definitions*]

PRACTICAL		COURSEWORK	
P1 (Practical)	30%	C1 (Coursework)	70%

SUBJECT ASSESSMENT PANEL Group to which module should be linked:
Computing

Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To introduce learners to programming constructs required to develop programs for embedded systems
- To develop an understanding of the role of embedded systems in the development of open and closed loop systems
- To appreciate the role of design and test documentation to support the development of embedded solutions

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the learner will be expected to be able to:
1. Create an open loop control system using programming constructs on an embedded device
2. Analyse specified requirements to design an embedded solution
3. Construct a closed loop solution of moderate complexity using an embedded system with a combination of hardware and software
4. Critically Evaluate an embedded solution

DATE OF APPROVAL:	05/2016	**FACULTY/OFFICE:**	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016.	**SCHOOL/PARTNER:**	South Devon College

PLYMOUTH UNIVERSITY MODULE RECORD

DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	TERM/SEMESTER:	All Year

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required	

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2023/24	**NATIONAL COST CENTRE: 121**
MODULE LEADER: Andy Cuffe	**OTHER MODULE STAFF: As required**

SUMMARY of MODULE CONTENT
Programming constructs on an embedded device e.g. sequence, selection, iteration, Digital/Analogue/PWM In/Out; programming languages; e.g. C, C++ for mBed and Arduino, Python for Raspberry Pi etc.
Open loop control systems e.g. Control of on board and external LEDs, motor control to introduce hardware control interfaces.
Design documentation e.g. test plans, circuit diagrams, components lists, program pseudo code and/or flowcharts.
Embedded solution of moderate complexity e.g. feedback through use of sensors/switches to control the input
Testing and evaluation; implementation of test plan to produce truthful and accurate test documentation; self-peer and module leader feedback leading to critical evaluation of the embedded solution; future suggestions and improvements.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities, Workshops and Tutorials	45	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Guided independent study	155	Learner centred support, recommended reading, extension tasks
Total	200	

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Practical	P1	practical skills assessment	Total = 100%	LO1 Implementation of an open loop control system in a controlled environment
Coursework	C1	Analysis and implementation report	Total = 100%	LO2, LO3, LO4 Report on the analyses and implementation of a moderately complex closed loop control system with evaluation

Updated by: Andrew Cuffe	Date: 17/05/2020	Approved by: Conrad Saunders	Date: 17.05.2020

Recommended Texts and Sources:
Make an Arduino-Controlled Robot (Make: Projects)
Programming the Raspberry Pi: Getting Started with Python
Mechatronics: Electronic Control Systems in Mechanical and Electrical Engineering.ISBN-13: 978-0582357051
https://controls.engin.umich.edu/wiki/index.php/Feedback_control

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.*

MODULE CODE:	**SOUD2370**	MODULE TITLE:	**Cyber Security Forensics**
CREDITS: 20		**FHEQ Level: 5**	**JACS CODE: I190**

PRE-REQUISITES: None	CO-REQUISITES: None	COMPENSATABLE: YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module investigates the underlying concepts and principles that are used in the field of digital forensics. It involves the demonstration of the tools and techniques used in the investigation process, and enables the student to understand the legal framework that informs the collection and preservation of this most fragile form of evidence.

ELEMENTS OF ASSESSMENT *Use HESA KIS definitions]*

COURSEWORK	
C1 (Coursework)	100 %

SUBJECT ASSESSMENT PANEL Group to which module should be linked:
Computing

Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- Students will familiarise themselves with the common terminology and reasons as to why digital forensic analysis is needed
- Students will demonstrate the tools and techniques used in the process of preserving and gathering crime scene evidence including "information in transit"
- Students will familiarise themselves with legislation and guidelines that support the process of collating and analysing digital artefacts

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the learner will be expected to be able to:
1. Examine current methods used to attack digital systems
2. Critically analyse the current and future challenges to digital forensics
3. Explain the legislation applicable to digital forensics and cyber security
4. Apply digital forensics tools to an investigation
5. Analyse cybercrime activities using digital artefacts and footprint evidence

DATE OF APPROVAL:	05/2016	FACULTY/OFFICE:	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016.	SCHOOL/PARTNER:	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	TERM/SEMESTER:	All Year

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2023/24	NATIONAL COST CENTRE: 121

MODULE LEADER: Steve Levenson	OTHER MODULE STAFF: Conrad Saunders

SUMMARY of MODULE CONTENT

Laws (Legislation.gov.uk) relating to digital forensics such as, Computer Misuse Act and The Data Protection Act (1998). Computers can also be used to commit other crimes that fall under, for example, The Sexual Offences Act 2003. These will not be explored here. The role of CEOP in digital crime.

Guidelines: Association of Chief Police Officers' (ACPO) Good Practice Guide for Computer-Based Electronic Evidence.

Attack methods such as, DDOS, SQL injection, malware and backdoor entry, Buffer Overflow.

File system analysis - understanding the structure of file system such as FAT, FAT32, NTFS, HFS and HFX

Acquire digital artefacts through tools such as encase and FTK to examine windows based systems, disk recovery and cloning, SIFT, Wireshark and Kali. Analysing system log files, monitoring systems and network traffic and scanning systems.

With the use of the tools identified, analyse the footprints from artefacts acquired.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities Workshops, Tutorials	45	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Guided Independent Study	155	Learner centred support, recommended reading, extension tasks
Total	200	

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	Written Investigative report Practical investigation of digital artefacts	60% 40% Total = 100%	LO1, LO2, LO3 Report on the current legislation, methods and challenges of digital forensics LO4, LO5 To Analyse digital artefacts to determine cybercrime activities.

Updated by: Nirosha Holton	Date: 17/05/2020	Approved by: Conrad Saunders	Date: 17.05.20

Recommended Texts and Sources:

Cybercrime and Digital Forensics: An Introduction, by Thomas J Holt and Adam M Bossler (2015)
Stewart, J M et al. (2015) CISSP ((ISC) Certified Information Systems Security Professional (7th Edition)

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.*

MODULE CODE:	SOUD2371	MODULE TITLE:	Immersive Technologies	
CREDITS: 20		FHEQ Level: 5		JACS CODE: I140

PRE-REQUISITES: None	CO-REQUISITES: None	COMPENSATABLE: YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module provides the student with the opportunity to practically investigate and explore modern, contemporary, cutting edge and immersive technologies. This practical investigation will lead on to the development of a prototype system using a modern, immersive technology, ultimately allowing the student to critically evaluate potential future uses of this prototyped system.

ELEMENTS OF ASSESSMENT *Use HESA KIS definitions]*

COURSEWORK		PRACTICAL		
C1 (Coursework)	50%	P1 (Practical)	50%	

SUBJECT ASSESSMENT PANEL Group to which module should be linked:
Computing

Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To promote investigation and practical exploration into modern, immersive technologies
- To encourage the development of prototype applications using modern, immersive technologies
- To critically evaluate potential and future uses of modern, immersive technologies

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the learner will be expected to be able to:
1. Develop a prototype system using modern, immersive technologies
2. Present a prototype system developed using modern, immersive technologies
3. Produce supporting technical documentation for a developed prototype
4. Critically evaluate potential uses and impacts of modern, immersive technologies

DATE OF APPROVAL:	05/2016	FACULTY/OFFICE:	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016.	SCHOOL/PARTNER:	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	TERM/SEMESTER:	All Year
Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required			

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2022/23	NATIONAL COST CENTRE: 121

MODULE LEADER: Andy Cuffe	OTHER MODULE STAFF: As required

SUMMARY of MODULE CONTENT

Prototyped system using immersive technologies such as; Oculus VR and SDK; Pervasive wearables e.g. Google Glass, Sony SmartEye, Microsoft HoloLens; gesture recognition technology; Microsoft Kinect, LEAP Motion; Embedded Operating Systems e.g. Smart TVs,

Presentation of prototyped system including; development of moderate complexity, working prototype

Produce supporting documentation for an intended audience including; typical audiences of whitepapers, reflective and concise writing styles, writing at relevant levels of technicality and with academic skill

Evaluation of potential uses including; development of a whitepaper, identification of potential uses, evaluation of suggested; conclusions and future recommendations

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities, Workshops and Tutorials	45	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Guided Independent Study	155	Learner centred support, recommended reading, extension tasks
Total	**200**	

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Practical	P1	Oral presentation of prototype Immersive system	Total = 100%	LO1, LO2 Presentation covering the development of a prototype immersive system.
Coursework	C1	Post development report	Total = 100%	LO3, LO4 Report containing supporting technical documentation that incorporates an evaluation of the uses of the immersive technology

Updated by: Andy Cuffe	Date: 17/05/2020	Approved by: Conrad Saunders	Date: 20.05.20

Recommended Texts and Sources:

Learning Virtual Reality: Developing Immersive Experiences and Applications for Desktop, Web, and Mobile: O-Reilly) (19 Nov 2015)

Learning C# Programming with Unity 3D Paperback: by Alex Okita (12 Sep 2014).

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.*

MODULE CODE:	SOUD2372	MODULE TITLE:	User-Centred Interface Design

CREDITS: 20	FHEQ Level: 5	JACS CODE: I140

PRE-REQUISITES: None	CO-REQUISITES: None	COMPENSATABLE: YES

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module aims to introduce students to the HCI principles, UML techniques and ethical issues required for the design and evaluation of user-centred interfaces.

ELEMENTS OF ASSESSMENT *Use HESA KIS definitions]*

COURSEWORK	
C1 (Coursework)	100%

SUBJECT ASSESSMENT PANEL Group to which module should be linked:
Computing

Professional body minimum pass mark requirement: N/A

MODULE AIMS:
- To introduce students to the UML techniques employed in the design of interfaces for user-centred software systems.
- To develop the skills and knowledge necessary to design human/computer systems which recognise the needs and characteristics of their users.
- To introduce students to a 'Usability Lab', and provide them with the skills to utilise such a facility for usability evaluation.

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the learner will be expected to be able to:
1. Specify usability requirements and advise upon possible designs for their realisation
2. Evaluate the usability of a computer system and its interface
3. Produce and evaluate a UML-based user interface design for a given scenario
4. Critically discuss the ethical, legal and social responsibility in the design of user-centred systems

DATE OF APPROVAL:	05/2016	FACULTY/OFFICE:	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016.	SCHOOL/PARTNER:	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	TERM/SEMESTER:	All Year

PLYMOUTH UNIVERSITY MODULE RECORD

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required	

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2023/24	**NATIONAL COST CENTRE: 121**
MODULE LEADER: Steve Levenson	**OTHER MODULE STAFF: As required**

SUMMARY of MODULE CONTENT

Psychology of the user

Models of human computer interaction: The relationships between human cognition and the design of computer-based environments

Requirements elicitation and specification

Design of Interfaces and Displays

Interface Evaluation based on HCI principles utilising a Usability Lab facility

Characteristics of good interface design

UML interaction model and techniques

How to prototype user interface design

How to model the control of the user interface using state machine diagrams

Usability testing

Ethical and legal issues in the IT industry and social responsibility of accessibility and usability

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities, Workshops, Tutorials	45	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Guided Independent Study	155	Learner centred support, recommended reading, extension tasks
Total	200	

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	Report on design requirements Post production report	50% 50% Total = 100%	LO1, LO2 Report on the realisation of user requirements and evaluation of an systems interface LO3, LO4 report containing a UML-based user interface with evaluation that critically discusses the ethical, legal and social responsibility of their design.

Updated by: Paul Shephard	**Date:** 17/05/2020	**Approved by:** Conrad Saunders	**Date:** 20.05.20
Recommended Texts and Sources: Designing Interactive Systems: A Comprehensive Guide to HCI, UX and Interaction Design: by Prof David Benyon (2013)			

UX Strategy: How to Devise Innovative Digital Products that People Want Paperback: by Jaime Levy (2015)