



**UNIVERSITY
CENTRE**
SOUTH DEVON



**UNIVERSITY OF
PLYMOUTH**

PROGRAMME QUALITY HANDBOOK 2021-22

FdSc Computing

Contents

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1. Welcome and Introduction to FdSc Computing.

Welcome to the Foundation Degree in Computing delivered by University Centre South Devon. 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
 - o Available in University News & Information on Moodle.
- Plymouth University's Student Handbook
 - o available at:
<https://www.plymouth.ac.uk/your-university/governance/student-handbook>

1.1. Programme Management

Conrad Saunders: Programme Coordinator Computing and Module leader for FdSc

Conrad is an experienced programme coordinator of computing and has been at the college for over 10 years. He has led the continuous development of further education and higher education programmes and recently co-created the BSc (Hons) Digital Technology Solutions Degree Apprenticeship, taught in conjunction with Plymouth University, and the rewrite of the successful FdSc Computing Degree. Conrad has experience of delivering networking, network management, information & systems security, programming, and server-side web development from level 1 to foundation degree level. He has been nominated for college awards for teaching and learning and was recently awarded for his 'Aspiration' to teaching. Conrad is the current module lead for Fundamentals of Computer Networks (Level 4) and Enterprise Networks (Level 5)

1.2. Personal Tutor

Personal tutors are designated as a sustained and first point of reference for individual students on personal, domestic or academic matters; detailed information will be available in your teaching, learning and assessment handbooks.

Year 1 personal tutor: Nirosha Holton

Year 2 personal tutor: Andrew Cuffe

Further information about personal tutoring at UCSD can be found by following this link to the [Student Development](#) policy.

1.3. Module Leaders

Andrew Cuffe - Lecturer and Module Lead

Andrew is a Lecturer of Computing and teaches level 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#. Andrew 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.

Paul Shephard - Lecturer and Module Lead

Paul has worked in computing and education for over 9 years and has held a range of posts, including programme leader, lead tutor and lecturer. He has taught across a wide array of qualifications and levels, including ITQ, BTEC levels 1-3, HND and foundation degree programmes. Paul has industry experience in multimedia learning resource development, client and server-side web development. Paul holds a secondary position as a Teaching and Learning Coach at present and is leading the use of digital platforms for teaching and learning. Paul is the module lead for Client-Side Web Development (Level 4) and Secure Application Development (Level 5)

Steve Levenson - Lecturer and Module Lead

Steve comes from the industry and had over 2 years' experience in education and assessing. Steve is specialised in Networking and system's architecture and is currently across FE, HE and apprenticeship standards. He is the module lead for Advance Project (Level 5) and Database Analysis, Design and Development (Level 4). In addition to his BSc (hons) Computing, Steve also holds a PGCE.

1.4. Course Contact List

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 Title | Module Leader | Contact |
|--|----------------------|--|
| Programming Concepts Computer Systems Infrastructure Object Oriented Programming (OOP) Application Development for Embedded Operating Systems | Andy Cuffe | andycuffe@southdevon.ac.uk |
| Fundamentals of Computer Networks Enterprise Networks | Conrad Saunders | conradsaunders@southdevon.ac.uk |
| Client-Side Web Development Secure Application Development | Steve Levenson | shepshephard@southdevon.ac.uk |
| Introduction to Computer Security Employability and Professional Development | Muhammed Haroon | gday@southdevon.ac.uk |
| Database: Analysis, Design & Development Advance Project | Steve Levenson | stevelevenson@southdevon.ac.uk |

1.5. 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 step 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 Reading

Recommended books/ebooks:

Level 4

| Module Title | Reading List |
|--|---|
| SOUND1507 – Introduction to Information Security | CompTIA Security + Study Guide (6th ed.) https://www.amazon.co.uk/CompTIA-Security-Certification-Guide-SY0-601/dp/1260464008/ref=dp_ob_image_bk |
| SOUND1505 – Fundamentals of Computer Networks | Computer Networks 5th Edition (2013) Tanenbaum, A & Wetherall, D: Pearson ISBN-10: 9781292024226 ISBN-13: 978-1292024226 Introduction to Networks Companion Guide (CCNAv7) (2020) Author Cisco Networking Academy Edition ISBN-10: 0136633668 ISBN-13: 978-0136633662 Switching, Routing, and Wireless Essentials v7.0 (SRWE) Companion Guide |

| | |
|--|--|
| | <p>(2020) Author Cisco Networking Academy Edition Newly Published Works ISBN-10: 0136729355 ISBN-13: 978-0136729358</p> |
| <p>SOUD1414 – Sys Infrastructure</p> | <p>Programming with 64-Bit ARM Assembly Language: Single Board Computer Development for Raspberry Pi and Mobile Devices by Stephen Smith 2 May 2020, ISBN-10: 1484258800</p> <p>PowerShell for Sysadmins: Workflow Automation Made Easy Paperback – 13 Jun. 2019 by Adam Bertram (Author), ISBN-10: 1593279183</p> <p>Exploring Arduino: Tools and Techniques for Engineering Wizardry Paperback – 5 Dec. 2019 by Jeremy Blum (Author), ISBN-10: 1119405378</p> <p>Essential Computer Hardware Second Edition: The Illustrated Guide to Understanding Computer Hardware (Computer Essentials) by Kevin Wilson, ISBN-10: 1911174924</p> |
| <p>SOUD1506 – Programming Concepts</p> | <p>C# 8.0 and .NET Core 3.0 – Modern Cross-Platform Development: Build applications with C#, .NET Core, Entity Framework Core, ASP.NET Core, and ML.NET using Visual Studio Code, 4th Edition Paperback – 31 Oct. 2019 by Mark J. Price (Author), ISBN-10: 1788478126</p> |
| <p>SOUD1413 - Database: Analysis, Design and Development</p> | <p>Database Design for Mere Mortals: A Hands-On Guide to Relational Database Design, By Michael J. Hernandez, 3rd Edition ISBN – 10: 0-321-88449-3</p> <p>MySQL Cookbook: Solutions for Database Developers and Administrators, By Paul DuBois, 3rd Edition, ISBN: 978-1-449-37402-0</p> <p>MySQL: MySQL_5, By Paul DuBois, 5th Edition, ISBN-10: 0-321-83387-2</p> |

| | |
|---|---|
| | <p>Learning MySQL and MariaDB: Heading in the Right Direction with MySQL and MariaDB, By Russell J.T. Dyer, ISBN: 978-1-449-36290-4</p> <p>Database Solutions: A Step-by-step Guide to Building Databases, By Thomas M. Connolly, Carolyn E. Begg, 2nd Edition, ISBN: 978-0-321-17350-8</p> |
| <p>SOUD1412 – Client Side Web Development</p> | <p>Responsive Web Design with HTML5 and CSS: Develop future-proof responsive websites - Ben Frain - Kindle Edition - ISBN : 1636100007</p> <p>Web Design with HTML, CSS, JavaScript and jQuery Set Paperback – 15 Aug. 2014 by Jon Duckett (Author). ISBN-10 1118907442</p> |

Level 5

| Module Title | Reading List |
|--|---|
| <p>SOUD2368 – Enterprise Networks</p> | <p>Cloud Computing: Concepts, Technology & Architecture (Prentice Hall Service Technology Series from Thomas Erl) (2013) : Prentice Hall</p> <p>https://keyhannet.com/wp-content/uploads/2018/11/Windows-Server-2016-Cookbook.pdf</p> |
| <p>SOUD2367 – App dev embedded systems</p> | <p>Unity Certified Programmer Study Guide: Become a professional Unity programmer by learning expert game scripting with Unity and C# Paperback – 11 Aug. 2020 by Philip Walker, ISBN-10: 1838828427</p> |

| | |
|---|---|
| <p>SOUND2463 – Secure application dev – Server side</p> | <p>Cordova 9 Programming: Everything you need to know about Cordova Paperback – 19 Nov. 2019 by Max Beerbohm, ISBN-10: 1709630965</p> <p>Ionic 5: Create awesome apps for iOS, Android, Desktop and Web Paperback – 12 Mar. 2020, by Andreas Dormann, ISBN-10: 3945102545</p> |
| <p>SOUND2366 – Advanced Project</p> | <p>IT Project Management: On Track from Start to Finish, Tata McGraw-Hill Education 2010, 3rd Edition, ISBN: 978-0-07-170015-3</p> <p>Software Project Management By Bob Hughes, Mike Cotterell 5th Edition ISBN13: 9780077122799</p> |
| <p>SOUND2364 – Object Oriented Programming</p> | <p>Expert C++: Become a proficient programmer by learning coding best practices with C++17 and C++20's latest features Paperback – Illustrated, 10 April 2020 by Vardan Grigoryan (Author), Shunguang Wu (Author) ISBN-10 : 1838552650</p> <p>Object Oriented Programming in C++: C++ Object Oriented Programming & Features of OOP's Kindle Edition by Richard Baker (Author) Format: Kindle Edition ASIN : B08K3WKZWZ</p> |

| | |
|--|---|
| <p>SOUD2463 – Employability and Professional Development</p> | <p>Personal and Professional Development for Business Students 1st Edition, Kindle Edition</p> <p>by Paul Dowson (Author) Format: Kindle Edition</p> <p>ASIN : B00TK8FJBS</p> <p>Skills for Employability Part One: Pre-Employment (3) (Lifelong Learning: Personal Effectiveness Guides) Paperback – 7 Oct. 2016</p> <p>by Rosalie Marsh (Author)</p> <p>ISBN-10 : 190830216X</p> |
|--|---|

a. COVID19 Programme Planning

| Covid 19 programme Planning | |
|--|--|
| General approach being undertaken | <p>We will follow government advice on social distancing and personal safety to ensure a 'Covid secure' working and learning environment.</p> <p>We know that we all may need to adapt if Covid conditions change. We will continue to provide a high-quality learning experience utilising technology solutions as may be required.</p> <p>We will continue to update our dedicated Covid 19 webpage if and when circumstances change. We encourage all new and returning students to review this page to better understand the approach we are taking.</p> |
| Programme Teaching and Learning changes being undertaken | In the event another COVID outbreak affecting the UCSD. We will continue to deliver content via Microsoft Teams platform as per the usual timetable of modules. Practical elements of the course may be affected, and the use of simulated software may be used where possible instead of physical components. |

2. Programme Specification

1. Programme Details

| | |
|---|--|
| Awarding Institution: | University of Plymouth |
| Partner Institution and delivery site (s): | South Devon College |
| Accrediting Body: | N/A |
| Language of Study: | English ¹ |
| Mode of Study: | Full Time and Part Time |
| Final Award: | FdSc |
| Intermediate Award: | |
| Programme Title: | FdSc Computing |
| UCAS Code: | G400 |
| JACS Code: | I110 |
| Benchmarks: | <p>Framework for Higher Education Qualifications (FHEQ), Foundation Degree Qualification Benchmark (FDQB).</p> <p>QAA Subject Benchmark Statement – Computing 2016</p> |

¹ Unless otherwise approved through Plymouth University's Academic Development and Partnerships Committee

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.

3. Details of Accreditation by a Professional/Statutory Body (if appropriate)

N/A

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

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.

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.

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).

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

9. Progression Route(s)

Students who successfully complete the FdSc may progress to stage 3 (Level 6) of the BSc (Hons) Computing and Software Development Programme at Plymouth University. 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.

1. Admissions Criteria

| Qualification(s) Required for Entry to this Programme: | Details: |
|---|--|
| <p>Level 2: Key Skills requirement / Higher Level Diploma: and/or GCSEs at Level 4 or above:</p> | <p>Functional Skills Level 2 English and Maths</p> <p>and/or</p> <p>5 subjects (preferred), to include maths, English</p> |
| <p>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:</p> | <p>48 UCAS points from a relevant subject area that covers topics such as networking, computer hardware, programming and web technologies.</p> |
| <p>Work Experience:</p> | <p>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.</p> |
| <p>Other HE qualifications / non-standard awards or experiences:</p> | <p>Computing relevant (Media, digital etc.) qualifications will be taken into account and will be considered on an individual basis.</p> |
| <p>APEL / APCL² possibilities:</p> | <p>Any application for APEL/APCL will be considered under Plymouth University regulations.</p> |
| <p>Interview / Portfolio requirements:</p> | <p>Interviews maybe required depending on previous qualifications and industry experience</p> |
| <p>Independent Safeguarding Agency (ISA) / Disclosure and Barring Service (DBS) clearance required:</p> | <p>This may be necessary as part of risk assessment in some situations. This will be dealt with on an individual basis.</p> |

² Accredited Prior Experiential Learning and Accredited Prior Certificated Learning

10. 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.

PS1. 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 | Semester 2 | Core |
| SOUD1505 | Fundamentals of Computer Networks | 20 | 1 | All Year | Core |
| SOUD1506 | Programming Concepts | 20 | 1 | Semester 1 | 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 | Semester 1 | 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 | Semester 2 | Core |
| SOUD1505 | Fundamentals of Computer Networks | 20 | 2 | All Year | Core |
| SOUD1506 | Programming Concepts | 20 | 1 | Semester 1 | 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. 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 |
| <p>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.</p> | <p>Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning</p> | 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.

| | | | | | |
|---|---|----------|-------------|---|---|
| <p>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.</p> | <p>Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning</p> | <p>2</p> | <p>ILO2</p> | <p>Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output</p> | <p>SOUD1411 SOUD1413 SOUD1414</p> |
|---|---|----------|-------------|---|---|

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

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|---|---|----------|------------------------|---|---|
| <p>(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.</p> <p>(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.</p> | | | | | |
| <p>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.</p> | | | | | |
| <p>Employment Related Skills: Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016)</p> <p>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. Develop of generic skills, and are able to evidence and demonstrate such skills, will gain significant advantage when seeking employment.</p> | <p>Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning</p> | <p>4</p> | <p>ILO4 & ILO5</p> | <p>Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output</p> | <p>SOUND1411 SOUND1413 SOUND1505 SOUND1506</p> |

An explanation for embedding Employment Related Skills through Teaching & Learning and Assessment at this level of the programme:

For the learner to appreciate a vocational context, 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. Key skills for employability are identified early at this level in the Employability and Professional Development module where learners appreciate and reflect upon their input to various work experience engagements. From this learners can identify long term goals and individual targets for progression to achieve at level 4 and level 5.

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| <p>Practical Skills: Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016)</p> <p>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. The ability to critically evaluate and analyse complex problems, including those with incomplete information, and devise appropriate solutions.</p> | <p>Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning</p> | <p>5</p> | <p>ILO6</p> | <p>Practical Skills Assessment, Demonstration, Oral Assessment and Presentation, Portfolio and Report.</p> | <p>SOUD1412 SOUD1413 SOUD1414 SOUD1505 SOUD1506</p> |
|--|---|----------|-------------|--|---|

An explanation for embedding Practical Skills through Teaching & Learning and Assessment at this level of the programme:

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 |
| <p>Knowledge / Understanding: Framework for HE Quals (FHEQ) (2015) 4.12 (Level 5) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016)</p> <p>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.</p> | <p>Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning</p> | 1 | ILO1 | Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output | SOUD2364 SOUD1507 SOUD2368 SOUD2370 |
| <p>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.</p> | | | | | |
| <p>Cognitive and Intellectual Skills: Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016)</p> | | | | | |

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| <p>By the end of this level of this programme the students will be able to demonstrate 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.</p> | <p>Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning</p> | 2 | ILO2 | Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output | SOUD2463 SOUD1507 SOUD2366 SOUD2370 |
| <p>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.</p> | | | | | |
| <p>Key Transferable Skills: Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016)</p> <p>By the end of this level of this programme the students will be able to demonstrate a threshold pass: Framework for HE Quals (FHEQ) (2015)</p> | <p>Primary: Lecture, Seminar, Tutorial, Demonstration, Practical</p> | 3 | ILO3 | Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and | SOUD2463 SOUD1507 SOUD2366 SOUD2367 |

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|--|--|--|--|-------------------------------------|--|
| <p>Communicate the results of their study/work accurately and reliably, and with structured and coherent arguments</p> <p>The qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility.</p> <p>Foundation Degree Qualification Benchmark (FDQB) (2014)</p> <p>QAA Subject Benchmark for Computing (2016)</p> <p>(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.</p> <p>(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.</p> <p>(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).</p> <p>(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.</p> <p>(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.</p> | <p>Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning</p> | | | <p>Presentation, Project Output</p> | |
|--|--|--|--|-------------------------------------|--|

[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.

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|--|---|---|----------|--|-------------------------------------|
| <p>Employment Related Skills: Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016)</p> <p>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. Develop of generic skills, and are able to evidence and demonstrate such skills, will gain significant advantage when seeking employment.</p> | <p>Primary: Lecture, Seminar, Tutorial, Demonstration, Practical Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning</p> | 4 | ILO4 & 5 | Report, Exam, Demonstration, Practical Skills Assessment, Oral Assessment and Presentation, Project Output | SOUND1507 SOUND2366 SOUND2367 |
|--|---|---|----------|--|-------------------------------------|

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.

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|--|--|---|------|--|-------------------------------------|
| <p>Practical Skills: Framework for HE Quals (FHEQ) (2015) Foundation Degree Qualification Benchmark (FDQB) (2014) QAA Subject Benchmark for Computing (2016)</p> | <p>Primary: Lecture, Seminar, Tutorial, Demonstration, Practical</p> | 5 | ILO6 | Practical Skills Assessment, Demonstration, Oral | SOUND2463 SOUND2364 SOUND2367 |
|--|--|---|------|--|-------------------------------------|

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|---|--|--|--|---|--|
| <p>By the end of this level of this programme the students will be able to demonstrate for a threshold pass:</p> <p>QAA Subject Benchmark for Computing (2016) (3.4) The ability to specify, design and construct reliable, secure and usable computer-based systems.</p> <p>The ability to evaluate systems in terms of quality attributes and possible trade-offs presented within the given problem.</p> <p>The ability to plan and manage projects to deliver computing systems within constraints of requirements, timescale and budget.</p> <p>The ability to recognise any risks and safety aspects that may be involved in the deployment of computing systems within a given context.</p> <p>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.</p> <p>The ability to critically evaluate and analyse complex problems, including those with incomplete information, and devise appropriate solutions.</p> | <p>Classes and workshops, Guided Independent Study Secondary/Supplementary: External visits, Work Based Learning</p> | | | <p>Assessment and Presentation, Portfolio and Report.</p> | |
| <p>An explanation for embedding Practical Skills through Teaching & Learning and Assessment at this level of the programme:</p> <p>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.</p> | | | | | |

3. 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.

PLYMOUTH UNIVERSITY MODULE RECORD

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 |
|---------------------|-----------------|----------------------|------------------------------------|

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|--------------------|----------------------|------------------------|
| 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

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|------------------------------------|-----------------------------|------------------------|-----------------------|
| 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

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

| | |
|-------------------------------|----------------------------------|
| ACADEMIC YEAR: 2021/22 | NATIONAL COST CENTRE: 121 |
|-------------------------------|----------------------------------|

| | |
|--------------------------------------|---|
| MODULE LEADER: Steve Levenson | OTHER MODULE STAFF: as necessary |
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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 legislation.

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 HTML, CSS3, JavaScript, and JQuery 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. | 25% | LO1 Design a website from initial user requirements. Create and justify these designs. |
| | | A2 - Website development, testing and review. | 75% Total = 100% | LO2, LO3 & LO4 Create a website using Agile principles, implement testing methods and conduct final review. |

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| Updated by: Paul Shephard | Date: 17/05/2020 | Approved by: Conrad Saunders | Date: 17.05.20 |
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PLYMOUTH UNIVERSITY MODULE RECORD

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|---|--|--|--|
| | | | |
| 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 |
|---------------------|-----------------|----------------------|---|

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|--------------------|----------------------|------------------------|
| CREDITS: 20 | FHEQ Level: 4 | JACS CODE: I240 |
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| 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

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| 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: 2021/22 | NATIONAL COST CENTRE: 121 |
|-------------------------------|----------------------------------|

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|--------------------------------------|---------------------------------------|
| MODULE LEADER: Steve Levenson | OTHER MODULE STAFF: Andy Cuffe |
|--------------------------------------|---------------------------------------|

SUMMARY of MODULE CONTENT

Identify Information needs within different functional areas of an organisation including areas such as; information needs, functional areas and levels of organisations, 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, BSOs, TSOs.

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, 1st, 2nd and 3rd normal form; defining the data in the data dictionary.

Data structures e.g. JSON

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

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, LO2 assessing terminology and use of queries to manipulate data |
| Coursework | C1 | Database implementation | Total = 100% | LO3, LO4 analyse and design from a given requirement. Implement using mysql |

PLYMOUTH UNIVERSITY MODULE RECORD

| | | | |
|------------------------------------|----------------------------|--|--------------------------|
| Updated by: Gemma Gilbey | Date: 17/05/2020 | Approved by: Conrad Saunders | Date: 17.05.20 |
|------------------------------------|----------------------------|--|--------------------------|

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

<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: 2021/22 | 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; DOS interrupts

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, msconfig)

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: 17/05/2020 | Approved by: Conrad Saunders | Date: 17.5.21 |
|----------------------------------|----------------------------|--|-------------------------|

Recommended Texts and Sources:

PLYMOUTH UNIVERSITY MODULE RECORD

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 | HECOS CODE: 100365 Computer Networks |
| CREDITS: 20 | FHEQ LEVEL: 4 | COMPENSATABLE: YES |
| PRE-REQUISITES: None | CO-REQUISITES: None | |

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 |
|--|--|
| <ol style="list-style-type: none"> 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: 2021/22
MODULE LEADER: Conrad Saunders

NATIONAL COST CENTRE: 121
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 (OSPF and RIP)
 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.) |

SUMMATIVE ASSESSMENT

| Element Category | Component Name | Component Weighting |
|-------------------------|---|----------------------------|
| Test | Series of in class tests (x2) on the fundamentals. LO1&2. | 100% |

PLYMOUTH UNIVERSITY MODULE RECORD

| | | |
|------------|--|------|
| Coursework | Report (200 words) and vlog on network design and configuration. LO3&4 | 100% |
|------------|--|------|

REFERRAL ASSESSMENT

| Element Category | Component Name | Component Weighting |
|------------------|--|---------------------|
| Test | Series of in class tests (x2) on the fundamentals. LO1&2. | 100% |
| Coursework | Report (200 words) 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: 20/05/2020 | Approved by: Nirosha Holton Date: 20/05/2020 |

PLYMOUTH UNIVERSITY MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD.

MODULE CODE: SOUD1506

MODULE TITLE: Programming Concepts

CREDITS: 20

FHEQ LEVEL: 4

HECOS CODE: 100956

PRE-REQUISITES: None

CO-REQUISITES: None

Programming

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: 2021/22
MODULE LEADER: Andy Cuffe

NATIONAL COST CENTRE: 121
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

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% |

PLYMOUTH UNIVERSITY MODULE RECORD

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

| | | |
|---|------------------|---|
| To be completed when presented for Minor Change approval and/or annually updated | | |
| Updated by: Andy Cuffe | Date: 17/05/2020 | Approved by: Conrad Saunders Date: 17-05-2020 |

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 |
|---|---|
| <ol style="list-style-type: none"> 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: 2021/22
MODULE LEADER: Gareth Day

NATIONAL COST CENTRE: 121
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 Web Goat.

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% |

PLYMOUTH UNIVERSITY MODULE RECORD

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: 08/09/2021 | Approved by: Andy Cuffe Date: 09-08-2021 |

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.

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| ELEMENTS OF ASSESSMENT <i>[Use HESA KIS definitions]</i> – 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 |
|--|---|
| <ol style="list-style-type: none"> 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. Some parts of this page may be used in the KIS return and published on the extranet as a guide for prospective students. Further details for current students should be provided in module guidance notes.

ACADEMIC YEAR: 2021/22
MODULE LEADER: Andy Cuffe

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.

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.

| 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. Post production report of secure server-side application, database integration and evaluation. (1000 words) LO2-4. | 25% 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: Gareth Wright
Date: 17/05/2020

Approved by: Conrad Saunders
Date: 17/05/2020

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 |
|--|---|
| <ol style="list-style-type: none"> 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). 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 | ILO2, ILO3, ILO4 & ILO5 |

| | |
|--|---|
| 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: 2021/22

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) | 50% |
| | Reflective Log - evidence of key transferrable skills and a reflective account informing future plans. LO3&4. (2000 words) | 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) | 50% |
| | Reflective Log - evidence of key transferrable skills and a reflective account informing future plans. LO3&4. (2000 words) | 50% |
| | | Total: 100% |

To be completed when presented for Minor Change approval and/or annually updated

Updated by: Gemma Gilbey
Date: 20/05/2020

Approved by: Conrad Saunders
Date: 20-05-2020

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: 2021/22 | 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, encapsulation, polymorphism, inheritance
 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: 17/05/2020 | Approved by: Conrad Saunders | Date: 20.05.20 |
|------------------------------------|----------------------------|--|--------------------------|

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.oodeesign.com/>
<https://msdn.microsoft.com/en-us/library/dd460654.aspx>

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: | SOUD2366 | MODULE TITLE: | Advanced Project |
|---------------------|-----------------|----------------------|-------------------------|

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|--------------------|----------------------|------------------------|
| CREDITS: 20 | FHEQ Level: 5 | JACS CODE: I190 |
|--------------------|----------------------|------------------------|

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|-----------------------------|----------------------------|---------------------------|
| 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: 2021/22 | 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).
 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 |

| | | | |
|-------------------------------------|----------------------------|--|--------------------------|
| Updated by: Gareth Wright | Date: 17/05/2020 | Approved by: Conrad Saunders | Date: 20.05.20 |
|-------------------------------------|----------------------------|--|--------------------------|

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>

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: | SOUD2367 | MODULE TITLE: | Application development for embedded operating systems |
|---------------------|-----------------|----------------------|---|

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|--------------------|----------------------|------------------------|
| 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: 2021/22 | 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. Arduino, mBed; embedded 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: 20/05/2020 | Approved by: Conrad Saunders | Date: 20.05.20 |
|------------------------------------|----------------------------|--|--------------------------|

Recommended Texts and Sources:

PLYMOUTH UNIVERSITY MODULE RECORD

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 |
|---------------------|-----------------|----------------------|----------------------------|

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| CREDITS: 20 | FHEQ Level: 5 | JACS CODE: I120 |
|--------------------|----------------------|------------------------|

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| 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

PLYMOUTH UNIVERSITY MODULE RECORD

| | |
|-------------------------------|----------------------------------|
| ACADEMIC YEAR: 2021/22 | NATIONAL COST CENTRE: 121 |
|-------------------------------|----------------------------------|

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|---------------------------------------|----------------------------|
| 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

Services: print, web, login (AD)

Support: Internet Service Providers (ISP), Levels of support (tiered), Helpdesk role and responsibilities and skills required

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 Manage Engine and activexperts (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

- **Active Directory, DHCP and DNS services.**
- **Configuring Active Directory** – for example using LDAP through custom built software tools (C# programming)
 - Manage local and remote users and groups - LDAP service configuration.
 - Group Policies and roaming profiles
- **Installation and configuration** of services such as, FTP and HTTP services (IIS / Linux Apache).
- **Automation:** Use of tools such as LDAP and Powershell to automate configuration and management of networks.

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 | |

| Category | Element | Component Name | Component Weighting | Comments include links to learning objectives |
|-----------------|----------------|-----------------------|----------------------------|--|
| | | | | |

PLYMOUTH UNIVERSITY MODULE RECORD

| | | | | |
|---------------------|----|---------------------------------------|--------------|---|
| 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 (2) of in class practical skills assessments |

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

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 (Prentice Hall Service Technology Series from Thomas Erl) (2013) : Prentice Hall
 Active Directory: Designing, Deploying, and Running Active Directory (2013), Brian Desmond : O'Reilly
<https://adminpro.ir/wp-content/uploads/2017/02/Windows-Server-2016-Hyper-V-Cookbook.pdf>
<https://msdn.microsoft.com/en-us/library/bb742424.aspx>
<https://msdn.microsoft.com/en-us/library/bb742437.aspx>
<http://cnp3bis.info.ucl.ac.be/>
<https://docs.microsoft.com/en-us/windows-server/virtualization/hyper-v/hyper-v-technology-overview>
[https://msdn.microsoft.com/en-us/library/system.directoryservices.protocols.ldapconnection\(v=vs.110\).aspx](https://msdn.microsoft.com/en-us/library/system.directoryservices.protocols.ldapconnection(v=vs.110).aspx)
<https://auth0.com/blog/using-ldap-with-c-sharp/>

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: | SOD 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 |
| 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: 2021/22 | 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: <i>(max 425 characters)</i> 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 <i>Use HESA KIS definitions</i> | | | |
| 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: | | | |
| <ul style="list-style-type: none"> • 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: <i>(additional guidance below)</i> | | | |
| At the end of the module the learner will be expected to be able to: | | | |
| <ol style="list-style-type: none"> 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

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|-------------------------------|----------------------------------|
| ACADEMIC YEAR: 2021/22 | NATIONAL COST CENTRE: 121 |
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| MODULE LEADER: Steve Levenson | OTHER MODULE STAFF: Conrad Saunders |
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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 | 60% | LO1, LO2, LO3 Report on the current legislation, methods and challenges of digital forensics LO4, LO5 To Analyse digital artefacts to determine cybercrime activities. |
| | | Practical investigation of digital artefacts | 40% Total = 100% | |

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

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

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| 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: 2021/22 | NATIONAL COST CENTRE: 121 |
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| MODULE LEADER: Andy Cuffe | OTHER MODULE STAFF: As required |
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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 |

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| Updated by: Andy Cuffe | Date: 17/05/2020 | Approved by: Conrad Saunders | Date: 20.05.20 |
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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: <i>(max 425 characters)</i> 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 <i>Use HESA KIS definitions]</i> | | | |
| 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: | | | |
| <ul style="list-style-type: none"> 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: <i>(additional guidance below)</i> At the end of the module the learner will be expected to be able to: | | | |
| <ol style="list-style-type: none"> Specify usability requirements and advise upon possible designs for their realisation Evaluate the usability of a computer system and its interface Produce and evaluate a UML-based user interface design for a given scenario 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 |
| 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: 2021/22 | 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 | 50% | LO1, LO2 Report on the realisation of user requirements and evaluation of an systems interface |
| | | Post production report | 50% Total = 100% | LO3, LO4 report containing a UML-based user interface with evaluation that critically discusses the ethical, legal and social responsibility of their design. |

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| Updated by: Paul Shephard | Date: 17/05/2020 | Approved by: Conrad Saunders | Date: 20.05.20 |
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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)