

**MODULE SPECIFICATION**

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| **Part 1: Information** | | | | | | | | |
| **Module Title** | | Operating systems and architecture | | | | | | |
| **Module Code** | | CY101 | | **Level** | | 4 | | |
| **For implementation from** | | September 2020 | | | | | | |
| **UWE Credit Rating** | | 30 | | **ECTS Credit Rating** | | 15 | | |
| **Faculty** | | Environment and Technology | | **Field** | |  | | |
| **Department** | | Computer Science and Creative Technologies | | | | | | |
| **Contributes towards** | | BSc (Hons)Cyber Security Technical Professional  Compulsory | | | | | | |
| **Module type:** | | Standard | | | | | | |
| **Pre-requisites** | | | None | | | | | |
| **Excluded Combinations** | | | None | | | | | |
| **Co- requisites** | | | None | | | | | |
| **Module Entry requirements** | | | None | | | | | |
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| **Part 2: Description** | | | | | | | | |
| This module introduces students to the foundations of computer systems architecture together with the integrated hardware and software components and subsystems that enable and allow data to be input, processed and output. Low level programming is used to illustrate the operation of the components. The module then explores the concepts of operating systems, virtualisation, hardware management and file systems.    Apprentices will learn the basic concepts of how data is represented in digital systems, logic and storage components, machine organisation and assembler programming. They will then build on this knowledge to see how levels of abstraction are introduced via operating systems and virtualisation to produce usable systems.  Lecture sessions cover the technical knowledge required. Designated practical work is included to ensure that apprentices have absorbed and understood the key principles involved.  This module will be based on ensuring that apprentice’s practical skills and knowledge gained in the block release sessions are carried into the workplace to inform their employment and generation of evidence of competency.  You will cover:   * classical computer architectures * virtualised architectures * digital logic, static and dynamic digital systems * machine level representation of data * assembly level machine organisation; * memory system organisation and architecture * interfacing and communication * Operating System principles * concurrency and synchronisation * scheduling and dispatch * memory management * file systems * I/O system | | | | | | | | |
| **Part 3: Assessment** | | | | | | | | |
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| Component A Written, unseen exam  Apprentices will be given an assembler program to analyse and describe its function. They must use it to explain the relationship between hardware components and programs.  Component B Practical  Apprentices will build a system consisting of a hypervisor, virtual client and virtual server. They will establish a client/server system and test functionality. They will write a report illustrating how their system has met the design requirement how it operates with reference to detailed operating system functions. | | | | | | | | |
| Identify final timetabled piece of assessment (component and element) | | | | | **B1** | | | |
| **% weighting between components A and B** (Standard modules only) | | | | | | | **A:** | **B**: |
| **50%** | **50%** |
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| **First Sit** | | | | | | | | |
| **Component A** (controlled conditions)  **Description of each element** | | | | | | | **Element weighting**  **(as % of component)** | |
| 1. Written unseen exam (2 hours) | | | | | | | 100% | |
| **Component B**  **Description of each element** | | | | | | | **Element weighting**  **(as % of component)** | |
| 1. Practical (written report 3,000 words) | | | | | | | 100% | |
| **Resit (further attendance at taught classes is not required)** | | | | | | | | |
| **Component A** (controlled conditions) **Description of each element** | | | | | | | **Element weighting (as % of component)** | |
| 1. Written unseen exam (2 hours) | | | | | | | 100% | |
| **Component B  Description of each element** | | | | | | | **Element weighting (as % of component)** | |
| 1. Practical (written report 3,000 words) | | | | | | | 100% | |
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| **Part 4: Learning Outcomes & KIS Data** | | | | | | | | |
| **Learning Outcomes** | On successful completion of this module students will be able to:   * Build test and debug a digital system to a specification (component B) * Understand computer architecture, digital logic and machine level representation of data. (component A) * Explain the relationships between hardware components and the subsystems used in a computer system (component A) * Implement simple programs in assembler language (component B) * Understand the purposes and implementation of operating systems (component B) | | | | | | | |
| **Key Information Sets Information (KIS)**  **Contact Hours**  **Total Assessment** | The table below indicates as a percentage the total assessment of the module which constitutes a;  **Written Exam**: Unseen or open book written exam  **Coursework**: Written assignment or essay, report, dissertation, portfolio, project or in class test  **Practical Exam**: Oral Assessment and/or presentation, practical skills assessment, practical exam (i.e. an exam determining mastery of a technique) | | | | | | | |
| **Reading List** | **Operating System Concepts**  **ISBN-13:** 978-1118093757  John Wiley & Sons; 9th Edition International Student Version edition (10 May 2013)  Reading list to be added | | | | | | | |

***FOR OFFICE USE ONLY***

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| **First Approval Date (and panel type)** | *Date of first {panel} approval* | | | |
| **Revision ASQC Approval Date**  *Update this row each time a change goes to ASQC* |  | **Version** | *1* | *Link to RIA* |
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