Student Handbook – Computer Science

BTEC Level 3 Subsidiary Diploma in IT

Course intent

This course has been designed to move people on their journey to working in the software industry. The course is taught through a project based
methodology with teams working to design, build and test open ended tasks. The curriculum has been designed to allow students to grow into independent learners with the resilience required to work in the fast paced technology industry.

The course is taught through six units selected to support software development. Two are mandatory units for the course and the remaining four units selected to support the core aim. In year one we complete the two mandatory units in terms one and two respectively, with the third unit taught throughout the year. This allows you the most time to learn the concepts required to take you onto the large work based assignments in year two based around designing, building and testing an application. The final two units of the course are taught and assessed together, meaning you must create a more complex application than you would if we taught them individually. This will mirror a real world work environment.

Year one

- Unit 1 Communication and Employability Skills in IT Term 1
- Unit 2 Computer Systems Term 2
- Unit 20 Client Side Customisation of Web Pages All Year

Year two

- Unit 6 Software Design and Development Term 1
- Unit 14 Event Driven Programming Term 2 and 3
- Unit 15 Object Oriented Programming Term 2 and 3

Assignments

You can expect two to three assignments for each unit on the course. These will be labelled assignment_unit number.assignment_number. E.g. Assignment 2.1. This indicates that the assignment is from unit 2 and is the second assignment for that unit. In year two where the units are joined assignments will be labelled programming-assignment.assignment number.

Technical Education Student Handbook

This course handbook, must be read in conjunction with the Technical Education Handbook, as this outlines what you can and can't do when it comes to assessment on the course. It includes important sections on plagiarism and the impact this can have on your learning, plus sections on how assignments work.

Scheme of Learning

Year One

- What is Linux
- Install Ubuntu
- Terminal
- Tmux
- Vim
- Markdown
- Taking notes in Markdown
- Pandoc
- Git and Github
- Working as a team

Unit 1 - Communication and Employability Skills in IT

Specification (https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Information-Technology/2010/Specification/Unit-1-Communication-and-Employability-Skills-for-IT.pdf)

- Introduction to Unit
- Personal attributes valued by employers
- Principles of Effective Communication
- Potential Barriers to Effective Communication
- Mechanisms that can reduce the impact of barriers
- Assignment 1.1
- Personal Development Plans
- Interpersonal and Written Communication Techniques
- Learning Styles
- Assignment 1.2

Unit 2 - Computer Systems

Specification (https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Information-Technology/2010/Specification/Unit-2-Computer-Systems.pdf)

- Introduction to Unit
- Computer Hardware Components
- Purpose and features of Operating Systems
- Software utilities and how they improve performance
- Assignment 2.1
- Help desk
- Assignment 2.2

Unit 20 - Client Side Customisation of Web Pages

Specification (https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Information-Technology/2010/Specification/Unit-20-Client-Side-Customisation-of-Web-Pages.pdf)

- Introduction to Unit
- HTML
- CSS Box Model
- CSS Selectors
- CSS Grid

- CSS Flexbox
- Build a Webpage and Mobile Application Layout
- JavaScript
- Variables and data types
- Loops
- Decisions
- Lists
- Objects
- Assignment 20.1
- Fundamentals of Web Page Design
- Assignment 20.2

Year Two

Unit 6 - Software Design and Development

Specification (https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Information-Technology/2010/Specification/Unit-6-Software-Design-and-Development.pdf)

- Introduction to Unit
- Introduction to Programming Paradigms
- Choice of language - Programming is Programming
- Sequence, Selection and Iteration
- Data Types - Recap of Unit 20
- Development Life-cycle
- Improve the readability of code - comments, layout and plugins
- Assignment 6.1
- Design project
- Algorithms
- Assignment 6.2

Unit 14 - Event Driven Programming

Unit 15 - Object Oriented Programming

Both units taught together as real world application

Specification - Unit 14 (https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Information-Technology/2010/Specification/Unit-14-Event-Driven-Programming.pdf)
Specification - Unit 15 (https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Information-Technology/2010/Specification/Unit-15-Object-Orientated-Programming.pdf)

- Introduction to the units
- Key features of event driven programs
- Is an operating System an Event Driven Program?
- Is Event Driven Programming suitable for Non-graphical applications?
- Events - load, click, addEventListener
- Key features of object oriented Programs
- Encapsulation
- Polymorphism
- Inheritance
- Is Object Oriented Programming suitable for Graphical Applications?
- Programming_Assignment.1
- Project - Bring it all together!
- Programming Assignment.2