OCR A Level Computing

COPPICE PERFORMING ARTS SCHOOL

Curriculum intent: The aims of this qualification is to enable our learners to develop an understanding and the ability to apply the fundamental principles and concepts of computer science. This includes: abstraction, decomposition, logic, algorithms and data representation. We also aim for our students to have the ability to analyse problems in computational terms through practical experience of solving such problems, including writing programs to do so. We expect our students to think creatively, innovatively, analytically, logically and critically.

ReVISION

Recapping all content from component 1 that was taught in year 12. Covered in second lesson with Component 2 and 3 covered in first lesson. Exam technique and exam questions covered during year 13 for Component 1 and 2.

Component 3 – Programming projects and revision

HE/ Apprenticeships

Design the solution
- Decompose the problem
- Describe the solution
- Describe the approach to testing

Developing the solution
- Iterative development process
- Testing to inform development

Evaluation
- Testing to inform evaluation
- Success of the solution
- Describe the final product
- Maintenance and development

Analysis of the problem
- Problem identification
- Stakeholders
- Research the problems
- Specify the proposed solution
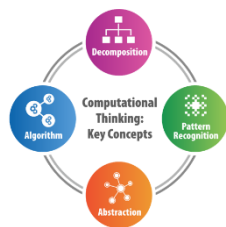
Problem solving and programming
- Programming techniques .

Practical programming activities across the year to embed programming skills learnt..

Component 2 & Programming skills

YEAR 13

Problem solving and programming
- Programming techniques .

Computational thinking 2
- Thinking logically
- Thinking concurrently .

Computational thinking 1
- Thinking abstractly
- Thinking ahead
- Thinking procedurally.

Subprograms 1
- How to create subprograms and different types of subprograms
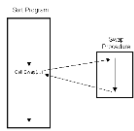
Subprograms 2
- Benefits of subprograms and the use of parameters and arguments

Arrays
- How to create lists
- 1, 2 and 3 dimensional arrays.
- How to loop through lists.

Mock
- End of year assessment.
- Assessing component 1 content

EXTERNAL ASSESSMENT MAY/JUNE

Component 1 & Programming skills

1.4 Data
- Data types
- Data structures
- Boolean algebra

1.5 Legal, moral, cultural and ethical issues
- Computing related legislation
- Moral and ethical issues

Strings
- String manipulations
- How to format strings
- Length of strings

Iterations
- Basic understand of for loops and while loops

Types of programming
- Understanding the difference between sequence and selection
- How to combine different programming methods.

Basic Python concepts
- Understanding the interface
- Print function
- Strings/Integers
- Variables

DATA MODELLING

Component 1 & Programming skills

YEAR 12

1.3 Exchanging data
- Compression, Encryption and hash tagging
- Databases
- Networks
- Web technologies

Types of programming
- Understanding the difference between sequence and selection
- How to combine different programming methods.

1.2 Software and software development
- Systems software
- Application generation
- Software development
- Types of programming languages

1.1 Components of a computer and their uses.
- Structure and function of the processor
- Types of processor
- Input, output and storage
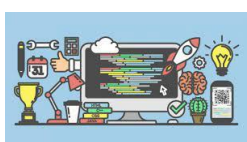
BTEC Level 3 Extended Certificate in Information Technology Learning Journey

Curriculum intent: The aim of the Information Technology curriculum is for learners to develop a passion of creating IT systems to manage and share information, with a view to progressing to a wide range of higher education courses.

COPPICE PERFORMING ARTS SCHOOL

C3 Implementation of online community building
C4 Data gathering analysis
- Identifying interaction, identifying audience profiles, monitoring likes/shares, number of visits

C5 Skills, knowledge & behaviours
- Planning & recording, reviewing & responding, evaluating outcomes, evaluating targets

LEARNING AIM B & C

B3 Content planning & publishing
- Identifying a target audience
- Linking content to target audience
- Researching keywords
- Best time to publish content

C1 Creating accounts & profiles
- Sign-up
- Creation of a company profile
- Customisation & configuration

C2 Content creation & publication

A2 Business uses of social media
- Posting different content formats
- Developing an audience
- Keywords & their use
- Direct & indirect advertising
- Links to commercial information
- Relationship between social media & company website

LEARNING AIM A

B1 Social media planning process
- Specific business requirements
- Content planning & publishing
- Developing online communities
- Enforcing social media policies

Unit 3 Using Social Media Business

HE/Apprenticeships

A3 Risks & Issues
- Negative comments
- Time constraints
- Unforeseen consequences
- Security issues

B2 Business requirements
- Working to set requirements
- Timescales & responsibilities
- Criteria for measuring success
- Social media websites to use
- Targets for the use of social media

B4 Developing an online community
- Use of promotional techniques
- Monitoring social media website streams

B5 Developing a social media policy
B6 Reviewing & refining plans

A1 Social media websites
- Developments in social media
- Use of social media
- Features of social media

D2 Evaluation of database testing
- Different types of testing
- Recording of actual results & analysis
- Commenting on results
- Test records
- Use of testing outcomes
- Iterative processes

C1 Producing a database solution
- Creating data tables
- Creating links, relationships
- Applying data validation rules
- Generating outputs
- User interface
- Automated functions
- Populating the database
- Devising & using SQL statements

B1 Relational database design
- Database design
- Relational algebra
- RDMS & SQL software
- Application design
- Implementation techniques
- Quality, effectiveness & appropriateness of the solution

D3 Evaluation of the database
- Strengths
- Weaknesses

A2 Manipulating data structures
- Updating, inserting, deletion
- Retrieval of data queries
- Admin of users
- Security, integrity, recovery

A3 Normalisation

CONTROLLED ASSESSMENT JANUARY

Unit 2 Creating Systems to Manage Information

YEAR 13

D1 Database design evaluation
- Use & application
- Coverage of functionality
- Strengths
- Improvements

C2 Testing & refining the database solution
- Different types of testing
- Selection & use of test data
- Recording test documentation
- Using testing outcomes to refine a database solution

B2 Design documentation
- Requirements of the brief
- Security & legal considerations
- Data structure designs
- User interface design
- Extracting & presenting data

A1 Relational database management systems
- Types
- RDBMS based on relational models

EXTERNAL ASSESSMENT MAY/JUNE

A3 Computer software
- Types of operating systems
- Role of the operating system
- Choice & use
- Utility software
- Application software
- Interfaces
- Common file types
- Implications on IT systems

B1 Connectivity
- Wireless & wired
B2 Networks
- Features, use & purpose
- Factors affecting the choice of network

B3 Issues relating to transmission of data
- Protocols to control data
- Security issues
- Bandwidth & latency
- Compression
- Codecs

D1 Threats to data
- Viruses
- Hackers
- Phishing
- Accidental damage

E1 Online Services
- Features
- Implications
- Uses

E2 Impact on organisations
- Features & implications
- Impact

F1 Moral & ethical issues
- Purpose & role of codes
- Impact of codes

F2 Legal Issues
- Current legislation protecting users & their data
- Accessibility of IT systems
- Moral & ethical factors of the use of IT systems

Unit 1 Information Technology Systems

A2 Peripheral devices & media
- Input/output/storage
- Manual & automatic data processing
- Accessibility devices
- Characteristics of storage media

C1 Online systems
C2 Online communities
- Ways of communicating
- Implications for individuals
- Implications for organisations

D2 Protecting data
- Processes
- Antivirus software
- Firewalls
- Encryption methods
- Legislation

E3 Using & manipulating data
- Sources of data
- Reliability of data
- Methods of collecting data
- Data accuracy
- Extracting & sorting data
- Numerical & data modelling
- Presenting data & results

A1 Digital devices
- Digital devices that form part of IT systems
- The function and use

A4 Emerging Technologies
A5 Choosing IT systems

LEARNING AIM B & C

C4 Website optimisation
- Performance & user testing
- Obtaining & evaluating feedback from others
- Checking interactivity
- Checking compatibility
- Refinements & making improvements

C1 Client-side scripting languages
- Embedding original client-side scripts into webpages
- Types of web-scripting languages
- Uses of scripting languages
- Constructs

A2 Factors affecting website performance
- Where scripts run
- Browser compliance
- Server-side factors
- Client-side factors

DATA MODELLING

Unit 6 Website Development

YEAR 12

C5 Skills, knowledge & behaviours
- Planning & recording
- Reviewing & responding to outcome
- Demonstrate own behaviours
- Evaluating outcomes

C3 Website review
- Quality in comparison with other similar websites
- Suitability for intended purpose & audience
- Suitability against clients requirements
- Legal & ethical constraints
- Strengths & improvements

C2 Website Development
- Use of CSS
- Use of original client-side scripting
- Compatibility with mobile & tablet devices
- Effective use of tools & techniques
- Uploading of files

B1 Website design
- Problem definition
- Purpose requirements
- Website design principles
- Initial design ideas
- Client-side scripting design tools & techniques
- Effectives use of assets
- Obtaining feedback from others
- Testing plan requirements
- Technical & design constraints
- Legal & ethical considerations

A1 Purpose & principles of website products
- Purpose of websites
- Principles of websites
- Media & objects
- Creativity & innovation
- Search engine optimisation

LEARNING AIM A

ETHICS