GCSE

CEA Accreditation

Subject Criteria and Requirements

DIGITAL TECHNOLOGY

December 2015

Contents

The criteria

Introduction

Subject criteria set out for all GCSE specifications the:

- knowledge and understanding, and skills; and
- Assessment Objectives (AOs) and assessment arrangements.

Along with the GCSE Design Principles, they provide the framework to support Awarding Organisations in the development of their GCSE specifications.

Aims and learning outcomes

The GCSE specification in Digital Technology must provide a broad, coherent, satisfying and worthwhile course of study that will motivate learners and enable them to progress with confidence to further study and/or employment. The specification must build on the knowledge, understanding and skills established through the Northern Ireland Curriculum at Key Stage 3.

1. GCSE specifications in Digital Technology must enable students to:

    - understand and apply the fundamental principles and concepts associated with the development of solutions using digital technology;
    - analyse problems through practical experience of solving such problems, including designing, writing and debugging solutions;
    - think creatively, innovatively, analytically, logically and critically;
    - understand the components that make up digital systems, how they communicate with one another and with other systems; and
    - understand the impact of digital technology on the individual and on wider society.

Subject content

2. The content of the specification must reflect the learning outcomes and be consistent with the statutory requirements of the Northern Ireland Curriculum at Key Stage 4.

3. The specification must enable learners to develop the knowledge, skills and understanding specified below:

    - characteristics of systems architecture including:
      – Hardware components; and
      – Data storage and capacity;
    - software types including application software and system software;

- applications of digital technology;
- database applications, and the role of data analytics ('big data');
- cloud technology;
- cyber security: forms of attack, methods of identifying vulnerabilities, and ways to protect software systems;
- Networks, including connectivity, types, security, protocols; and
- the ethical, legal and environmental impacts of digital technology on wider society, including issues of privacy and cyber security.

Learners will also have the choice to study one of two specialist areas:

Option A

This option must require learners to develop a knowledge and understanding of:

- designing solutions using appropriate tools, including User interface design;
- designing simple applications, such as a game, using appropriate tools;
- how key concepts such sequencing, selection and repetition can be used to complete a task;
- web technology, including HTML tags;
- multimedia technology; and
- the significance of testing and the development of an appropriate test plan.

Option B

This option must require learners to develop a knowledge and understanding of the fundamentals of programming, including:

- designing solutions using appropriate tools, including flowcharts;
- creating and evaluating algorithms to solve problems in a procedural or object-oriented language;
- programming structures such sequencing, selection and repetition and how each can be used to complete a task;
- the concept of data types and data structures;
- simple error handling techniques; and
- the significance of testing and the development of an appropriate test plan.

Skills

GCSE specifications in Digital Technology must require students to develop the following skills:

- take a systematic approach to problem solving and make use of conventions including flowcharts;
- design, code, test, implement and refine programs, either to a specification or to meet a need;
- evaluate the fitness for purpose of a solution in meeting requirements efficiently using debugging and testing;
- manipulate and process data and other information, sequence instructions, model situations and explore ideas;
- communicate data and information in a form fit for purpose and audience; and
- adopt safe, secure and responsible practice when using digital technology.

Assessment Arrangements

4. The assessment arrangements must enable knowledge, understanding and skills in Digital Technology to be reported through an overall grade.

Assessment Objectives

5. The specification must require learners to demonstrate their ability to:

Assessment Objectives		Weighting
AO1	Learners should be able to: • demonstrate knowledge and understanding of the concepts, characteristics, components and functions of digital technology.	25–35%
AO2	Learners should be able to: • apply knowledge and understanding of digital technology to investigate and analyse problems and propose solutions.	40–50%
AO3	Learners should be able to: • design, develop, implement and evaluate solutions to solve problems, making reasoned judgments and presenting conclusions.	20–30%

Scheme of assessment

6. The specification must allocate a weighting of 70 percent to external assessment and a weighting of 30 per cent to non-exam assessment in the overall scheme of assessment.