

SEVERN BUSINESS COLLEGE

SBC Level 4 Certificate of Higher Education in Computer Science

Course Handbook

Qualification
SBC Level 4 Certificate of Higher Education in Computer Science

Level
4

Total Qualification Time
1200

Credit Value
120

Aim of the Course
The Level 4 Certificate of Higher Education in Computer Science is designed to provide learners with a strong foundation in the principles, methods, and practices of modern computing. The qualification emphasizes both theoretical knowledge and practical skills, enabling students to develop expertise in programming, database management, computer systems, and software engineering. This diploma prepares learners for higher-level academic study and for professional roles in the IT and computing industry.

By completing this course, learners will:

- Gain a broad understanding of computer science concepts.
- Develop problem-solving, analytical, and coding skills.
- Build real-world competencies applicable in computing-related fields.
- Be prepared for both academic progression and entry-level employment in IT.

Assessment
Assessment is through practical assignments, with no exams - to more accurately reflect the real working environment.

Course Structure

SBC Level 4 Certificate of Higher Education in Computer Science			
Unit number	**Units**	**Unit level**	**Unit credit**
1	Principles of Computer Science	4	20
2	Computer Systems and Networking	4	20
3	Database Design and Development	4	20
4	Software Engineering Practices	4	20
5	Web Development and Internet Technologies	4	20
6	Professional and Academic Skills in Computing	4	20

Assessment Grades

Grade	Marking Criteria
Pass	All learning outcomes are achieved. All assessment criteria are met.
Fail	All learning outcomes are not achieved. All assessment criteria are not met.
No Marks	Plagiarism

UNIT SPECIFICATIONS

Unit Title
Principles of Computer Science

Level
4

Learning Time Hours
200

Credit Value
20

Learning outcomes and assessment criteria
In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning Outcome	Assessment Criteria
1. Understand the fundamental concepts of computer science.	1.1 Explain key principles of algorithms and computational thinking. 1.2 Describe the role of data representation in computing. 1.3 Analyse the relationship between hardware, software, and systems.
2. Apply problem-solving techniques in computer science.	2.1 Identify appropriate problem-solving strategies for computing tasks. 2.2 Apply algorithmic design to solve a computational problem. 2.3 Evaluate the effectiveness of chosen solutions.
3. Demonstrate understanding of programming paradigms.	3.1 Compare different programming paradigms (e.g., procedural, object-oriented). 3.2 Apply a paradigm to solve a programming task. 3.3 Justify the choice of paradigm in a specific context.
4. Analyse the impact of computer science in society.	4.1 Discuss the ethical implications of computer use. 4.2 Explain legal and social considerations in computing. 4.3 Evaluate the future role of computer science in industry and society.

UNIT SPECIFICATIONS

Unit Title
Computer Systems and Networking

Level
4

Learning Time Hours
200

Credit Value
20

Learning outcomes and assessment criteria
In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning Outcome	Assessment Criteria
1. Understand the components and functions of computer systems.	1.1 Explain the role of input, output, processing, and storage devices. 1.2 Describe operating system functions and architecture. 1.3 Analyse system performance factors.
2. Understand computer networking principles.	2.1 Explain network topologies, protocols, and standards. 2.2 Differentiate between LANs, WANs, and the Internet. 2.3 Evaluate the role of security in networking.
3. Configure and test basic computer networks.	3.1 Set up a small-scale network using appropriate hardware/software. 3.2 Troubleshoot common networking problems. 3.3 Evaluate network performance and efficiency.
4. Assess the role of emerging technologies in networks.	4.1 Identify current and emerging networking trends. 4.2 Explain the impact of cloud computing on networking. 4.3 Evaluate future networking developments.

UNIT SPECIFICATIONS

Unit Title
Database Design and Development

Level
4

Learning Time Hours
200

Credit Value
20

Learning outcomes and assessment criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning Outcome	Assessment Criteria
1. Understand principles of database systems.	1.1 Explain different types of databases. 1.2 Describe database architecture and models. 1.3 Analyse database use in organizations.
2. Design a relational database structure.	2.1 Apply normalization to design database tables. 2.2 Create an Entity-Relationship (ER) diagram. 2.3 Justify design choices.
3. Develop and implement database solutions.	3.1 Use SQL to create and manipulate database structures. 3.2 Apply queries to retrieve and update data. 3.3 Test and validate database functionality.
4. Evaluate database solutions.	4.1 Assess the efficiency of queries. 4.2 Evaluate security features in databases. 4.3 Recommend improvements to a database system.

UNIT SPECIFICATIONS

Unit Title

Software Engineering Practices

Level

4

Learning Time Hours

200

Credit Value

20

Learning outcomes and assessment criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning Outcome	Assessment Criteria
1. Understand software development lifecycles (SDLC).	1.1 Explain different software development methodologies. 1.2 Compare agile vs. traditional methods. 1.3 Analyse project requirements for methodology suitability.
2. Apply software design principles.	2.1 Create design documentation for software solutions. 2.2 Apply modular design techniques. 2.3 Justify design decisions.
3. Implement software applications.	3.1 Write clean and maintainable code. 3.2 Apply debugging and testing strategies. 3.3 Deploy a functioning software application.
4. Evaluate software engineering practices.	4.1 Assess code quality and maintainability. 4.2 Analyse project management techniques in development. 4.3 Recommend improvements for software development processes.

UNIT SPECIFICATIONS

Unit Title

Web Development and Internet Technologies

Level

4

Learning Time Hours

200

Credit Value
20

Unit aim
The aim of this unit is to enable learners to understand cyber security and the consequences and implications of inadequate cyber security. They will understand the key terminology and the motivations of good and bad actors. They will also investigate the advantages and disadvantages of security by design.

Learning outcomes and assessment criteria
In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning Outcome	Assessment Criteria
1. Understand web technologies and standards.	1.1 Explain the structure of the World Wide Web. 1.2 Describe web standards and protocols. 1.3 Analyse the role of browsers and servers.
2. Design and develop web pages.	2.1 Create a responsive web layout using HTML and CSS. 2.2 Apply client-side scripting to enhance interactivity. 2.3 Evaluate usability and accessibility of web pages.
3. Implement server-side technologies.	3.1 Develop dynamic web content using server-side scripting. 3.2 Connect a website to a database. 3.3 Test and troubleshoot web applications.
4. Evaluate web development practices.	4.1 Assess security considerations in web development. 4.2 Analyse current trends in web technologies. 4.3 Recommend improvements for web-based systems.

UNIT SPECIFICATIONS

Unit Title
Professional and Academic Skills in Computing

Level
4

Learning Time Hours
200

Credit Value
20

Learning outcomes and assessment criteria
In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning Outcome	Assessment Criteria
1. Develop academic skills for computing study.	1.1 Apply referencing and citation techniques. 1.2 Write academic reports in a computing context. 1.3 Present technical information effectively.
2. Apply professional skills in computing.	2.1 Demonstrate effective teamwork in IT projects. 2.2 Apply communication skills in technical and non-technical contexts. 2.3 Evaluate personal strengths and weaknesses.
3. Understand the role of professionalism in IT.	3.1 Explain ethical issues in IT practice. 3.2 Analyse professional codes of conduct in computing. 3.3 Assess the impact of professional behavior in workplace scenarios.
4. Apply reflective practice to personal and academic development.	4.1 Create a personal development plan (PDP). 4.2 Reflect on own learning and skill acquisition. 4.3 Recommend strategies for continuous improvement.

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