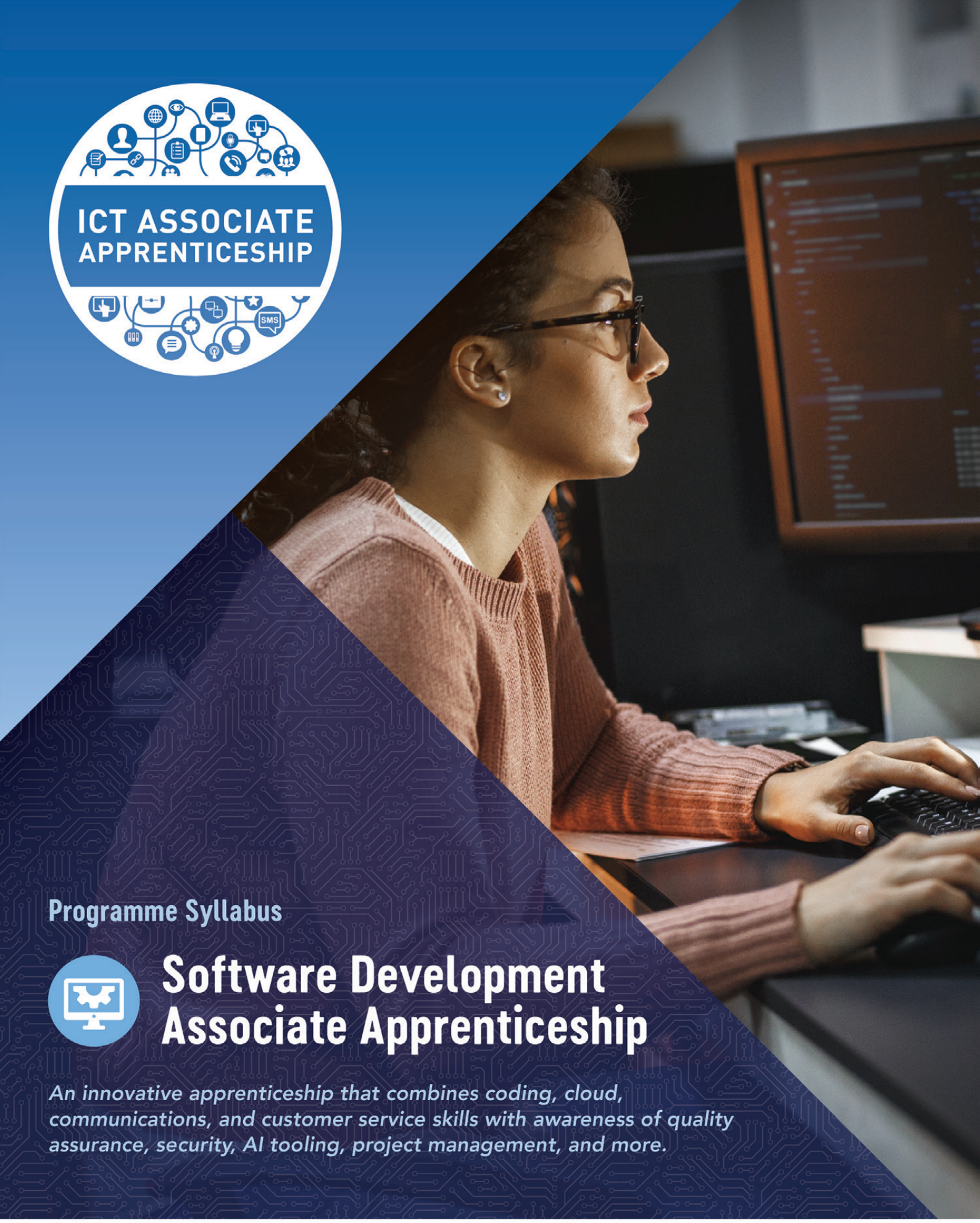
ICT ASSOCIATE APPRENTICESHIP



Programme Syllabus

Software Development Associate Apprenticeship

An innovative apprenticeship that combines coding, cloud, communications, and customer service skills with awareness of quality assurance, security, AI tooling, project management, and more.

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GENERATION APPRENTICESHIP
www.apprenticeship.ie

Typical job roles in Software Development include: Quality Assurance Lead, Application Developer, Games Developer, Product Lead, Project Management Lead, and UI/UX Designer.

1. Introduction

Apprenticeships are an exciting and proven way for employers to develop talent for their company and industry. These programmes are designed by industry-led groups to promote growth and competitiveness within the IT sector. Apprentices earn while they learn, and build valuable work-ready skills in a chosen occupation.

Completing the apprenticeship journey opens up exciting and rewarding careers for motivated learners with an interest in software development. This exposure to a learning environment, grounded in the practical experience associated with a workplace, is the heart of the national apprenticeship system and helps learners discover and develop their talents to the fullest extent. Our mission at Fastrack into Information Technology, then, is to assist people in finding opportunities through the acquisition of tech skills in the face of rapid technological changes. We warmly invite you to take part in this journey, where you will be accompanied by our support and encouragement at all times.

1.1 Programme Design

The Software Development Associate Apprenticeship is a two-year programme designed for those who have recently completed second-level education or mature learners seeking to retrain. It is a dual-education programme involving both college-based and workplace learning. This college-based learning is state-funded and apprentices receive a salary from their employer while on the programme. Apprentices will get the opportunity to acquire crucial theoretical and practical skills necessary to secure and retain employment in the world of software development. Recently, FIT concluded the first formal large-scale review of this programme, culminating in a modified programme targeted toward meeting contemporary business needs.

In summary, the revised programme includes updated content in customer support training, extended periods for apprentices to build basic coding skills, and the opportunity to use the Python language in diverse contexts throughout the different modules. In addition, the revised programme refocuses testing activities on a broader quality assurance agenda, while greatly enhancing apprentice understanding of contemporary/ Agile project management approaches and methodologies such as Lean, SCRUM, and more. The programme will expose apprentices to popular cloud development platforms and contemporary programming languages, also offering the opportunity to complete vendor-specific certifications, as noted in Section 6.

1.2 Impact of AI on Software Development

The functionality and usefulness of various generative AI-based tools have increasingly proved their worth to small businesses, public services providers, and large multi-national organisations alike. They are now utilised widely within the field of software development in areas related to code generation, review, testing, and refactoring activities. Future apprentices will increasingly utilise these technologies in their day-to-day activities. As such, demystifying key AI concepts and awareness of the real-world application of generative AI tooling is essential to provide a solid base for apprentices. All candidates who apply to this programme will be provided access to a self-paced, online learning path developed by IBM that provides an accessible and introductory understanding to AI ethics and practical prompting strategies. In addition, during the completion of the programme, apprentices will utilise AI tools within integrated development environments during their off-the-job programme elements, providing relevant, real-world examples and explanations to improve their code development skills.

It is important to note that the design of this programme does not rely on acquiring a narrow variety of coding language skills. The scope of the programme's aims has been widened to take into account changing business needs, based on generative AI solutions now available in the marketplace. **This programme aims to holistically develop abilities crucial for software developers across various contemporary themes, which have increasing relevance and currency for employers offering ICT services, as well as those who use, manage, and maintain large-scale ICT systems.**

1.3 Stakeholders and Roles

A software developer, also known as a computer programmer, builds and tests high-quality code across front-end, logical, and database layers. Developers typically work as part of a larger team, in which they have responsibility for some of the specific elements of the overall project. While the customer requirements will typically be defined and agreed upon by more experienced or specialist team members, such as business analysts or technical architects, the developer will be able to interpret design documentation and specifications. Software products, applications, and services are widely used across many sectors and, potentially, all sectors in a modern economy. Most Software Development Associate apprentices will work in ICT industries researching, developing, designing, selling, installing, and maintaining software products and services. However, many will work in other sectors that use, develop, and apply software solutions to support their activity. Typical job roles in Software Development include: **Quality Assurance Lead, Application Developer, Games Developer, Product Lead, Project Management Lead,** and **UI/UX Designer**.

1.4 Governance

FIT is an industry-led, not-for-profit organisation that develops and provides innovative education and training programmes. As Coordinating Provider, FIT is responsible for the operational and quality assurance aspects of the programme. FIT works closely with its training delivery partners (ETBs), employers, and regulators (namely: Quality and Qualifications Ireland, SOLAS, and the National Apprenticeship Office) to ensure that the ICT Apprenticeships meet the needs of all stakeholders.

2. Award Title, Level, and QQI Certification

Successful completion of all modules on this programme results in the attainment of a Quality and Qualifications Ireland-accredited **Advanced Certificate in Computer Programming**, which is placed at Level Six on the National Framework of Qualifications.

2.1 Modular Components

Based on the allocation of 200 FET Credits, this programme is split into sixteen modules, beginning with SD-TA-001 and concluding with SD-TA-016. Apprentices complete fourteen modules in off-the-job training mode under the guidance and direction of an off-the-job tutor. Key ideas introduced in these modules are then reinforced by way of practical experiences in the workplace, as well as self-directed learning activities conducted throughout the two-year programme. Modules SD-TA-015 and SD-TA-016 are based on these on-the-job activities, as apprentices complete reflective logbook entries to demonstrate their application of learning in the workplace.

Module		Course Type	FET Credits	Directed	Self-Directed
	Programme Induction	N/A	0	31.5	0
SD-TA-001	Software Development and Design Fundamentals	Off-the-Job	15	94.5	55.5
SD-TA-002	Customer Support Provision for the ICT Professional	Off-the-Job	5	31.5	18.5
SD-TA-003	Web Development (HTML, JavaScript, CSS3)	Off-the-Job	15	94.5	55.5
SD-TA-004	Software Development Using SQL (Databases)	Off-the-Job	10	63	37
SD-TA-005	Data & Cybersecurity: Essentials for Programming	Off-the-Job	5	31.5	18.5
SD-TA-006	Install, Configure, and Upgrade ICT Software	Off-the-Job	5	31.5	18.5
SD-TA-007	Object Oriented Programming	Off-the-Job	10	63	37
SD-TA-008	Project Management and Agile Systems of Work	Off-the-Job	10	63	37
SD-TA-009	Event-Driven Programming	Off-the-Job	10	63	37
SD-TA-010	Procedural Programming	Off-the-Job	10	63	37
SD-TA-011	Quality Assurance and Software Testing	Off-the-Job	5	31.5	18.5
SD-TA-012	Systems Development	Off-the-Job	10	63	37
SD-TA-013	Introduction to Cloud Development Practice	Off-the-Job	10	63	37
SD-TA-014	Contemporary Programming Practice	Off-the-Job	15	94.5	55.5
SD-TA-015	Applied Learning in the Workplace: Year 1	On-the-Job	25	525	0
SD-TA-016	Applied Learning in the Workplace: Year 2	On-the-Job	40	1672	0

3. Programme Access and Entry Requirements

FIT recruits candidates who express an interest in joining the programme by completing an online application form, available at www.fit.ie. Initially, the application is screened with respect to basic eligibility requirements noted below. Successful candidates will also be registered with SOLAS as the regulatory authority for the registration of apprentices in Ireland.

All candidates will be required to meet the specific entry requirements. Once the screening process has been completed, FIT will organise interviews between candidates and prospective host employers who will then provide the mentored work placement environment. The employer will select the applicant(s) to whom they will offer a role in their organisation as full time employee for the duration of the programme. This decision is made exclusively by the employer and FIT has no role in this candidate selection process.

Since 2018, FIT has made available several supports for candidates who may have additional learning needs. Candidates with such requirements or disabilities are given the opportunity to make this known to FIT from the start of the application process. These supports range from assistance in navigating the candidate application process to ongoing support during participation in the programme, including advice on reasonable accommodations.

3.1 Specific Entry Requirements

Minimum candidate entry requirements are as follows. A successful candidate:

- Must be 18 years or older;
- Will be required to complete an initial aptitude test;
- Must have achieved a passing grade (or O6/H7) in 5 or more subjects, including Mathematics and English (both at Ordinary Level or above), in the Irish Leaving Certificate;
- Must be eligible to participate in Further Education and Training programmes; and
- Must be entitled to study and work in Ireland.

The Recognition of Prior Learning procedure may be employed in determining equivalence to the above requirements for those candidates without a suitable Leaving Certificate qualification. Additionally, those who have completed a FIT recognised Pre-Tech Apprenticeship programme will have the opportunity to furnish evidence of the same along with a copy of their Junior Certificate transcript as part of this process.

Key candidate skills and attributes are as follows. A successful candidate must:

- Be numerate and literate;
- Have good learning skills;
- Be interested in technology and customer service;
- Have the ability to absorb product knowledge;
- Be motivated and analytical;
- Possess good communication skills, a pleasant personality, and be determined to succeed;
- Have excellent interpersonal skills;
- Be able to work as a team member; and
- Be adaptable and flexible.

4. Programme Aims and Objectives

The Software Development Associate Apprenticeship programme aims to enable participants to secure and retain employment in a software development or computer programming role. Candidates accepted into the programme will be able to combine technical, communications, project management, and personal development skills to meet the employer's requirements and should be able to act autonomously, or as part of a team, as the occasion demands.

4.1 Specific Programme Objectives

The expected outcome is that the apprentice will be able to:

- Perform systems analysis and design investigations using recognised methodologies;
- Understand how object-oriented programming concepts are used in programming and systems development;
- Design, create, implement, and test programming solutions;
- Use event-driven programming concepts in programming and systems development;
- Use procedural programming concepts in programming and systems development;
- Implement the principles of software application testing;
- Develop skills to test, implement, and evaluate software applications prior to commercial deployment, regardless of the programming language being used;
- Use the principles of project management to set up new projects;
- Mitigate for risks and develop skills in using management tools to monitor and review projects;
- Understand the importance of effective communication, such as written, verbal, and non-verbal, in a business environment;
- Understand why effective communication is critical for businesses by using different types of communication methods suitable for specific purposes;
- Understand the systems development life cycle;
- Identify the various stakeholder perspectives to ensure that the solution meets requirements and that the broader implications are considered;
- Develop practical skills in the use of the various tools and techniques associated with different methodologies for systems development;
- Use different methods and resources available to help plan for personal and professional development;
- Learn how to identify factors that may affect targets or goals, prioritise actions, and utilise feedback from others to aid their development and career progression; and
- Develop a plan which can either be used during a course of study or as a tool for future and current career paths.

5. Programme Structure

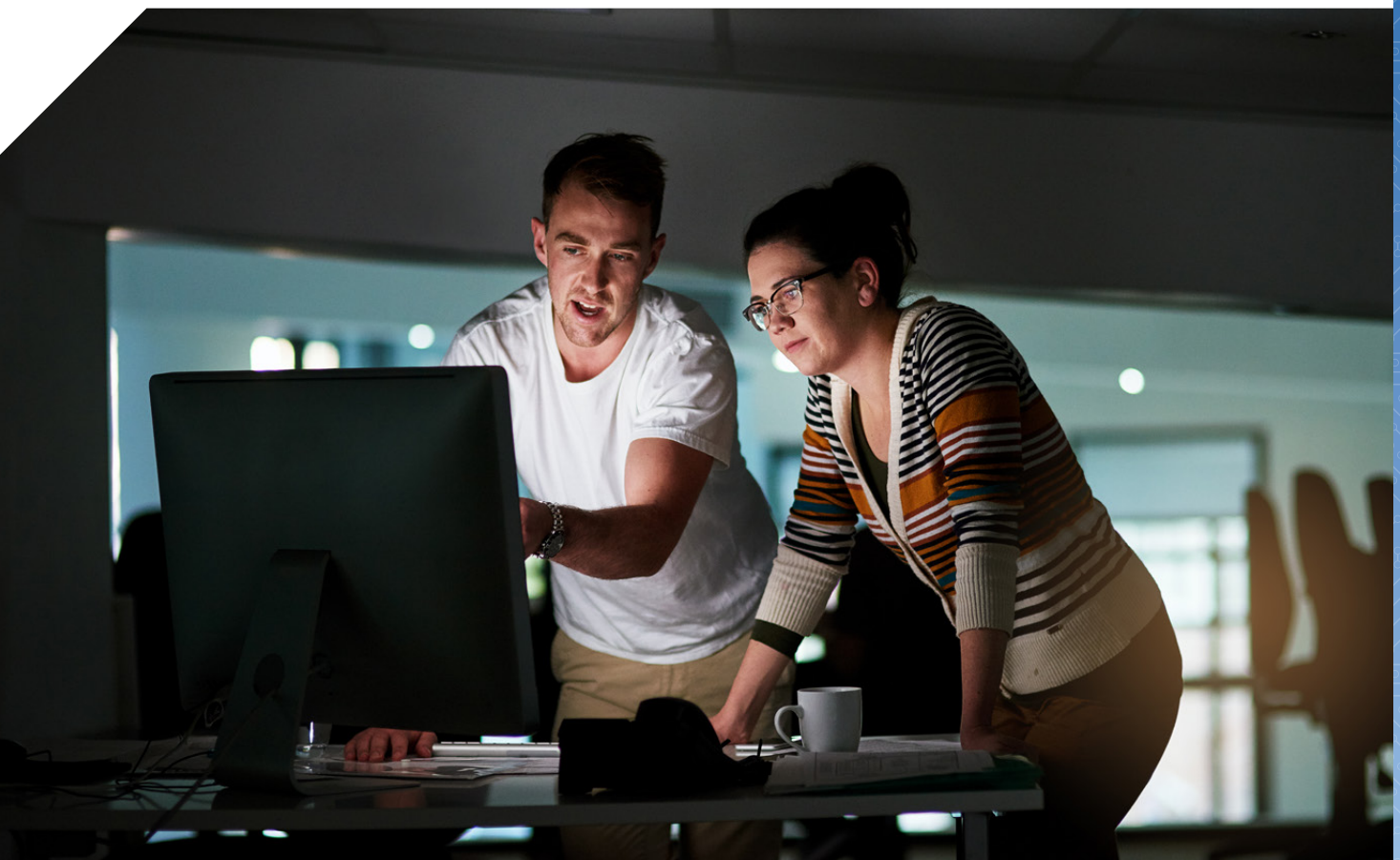
The Software Development Associate Apprenticeship programme is delivered across four semesters. The titles of these semesters correspond with specific milestones necessary for meaningful apprentice progress.

- **Semester 1:** Laying the Foundation.
- **Semester 2:** Introducing the Workplace.
- **Semester 3:** Consolidation.
- **Semester 4:** Preparation for Autonomy.

The table on Page 8 details typical on-the-job (WORKPLACE) and off-the-job (COLLEGE) timings for this two-year, full-time apprenticeship programme. Attendance for the duration of each full day of training, either in college or the workplace, is mandatory.

The college-based training aspect of this programme is usually delivered in person. Candidates are notified of specific arrangements once they prepare to commence employment with their apprenticeship employer. In practice, apprentices attend an Education and Training Board facility for college-based training. These facilities are based throughout the Republic of Ireland and offer apprentices a high-quality training experience. FIT endeavours, where feasible, to align the geographic location of college-based training with the location of an employer's business operations. However, this is not possible in all instances, and so candidates must be willing to make arrangements to travel in order to attend specified training locations.

Subject to accreditor approval, in a small number of intake instances each year college-based training elements may be delivered via a blended approach to instruction. In such cases, apprentices conduct training sessions from home, or their place of work, via a virtual classroom. However, some in-person attendance will still be required.



5. Programme Structure (continued)

Typical Weekly Delivery Schedule Year 1 (Semesters 1 & 2)

Week Numbers	*Location*	*Days*
1 – 3	**Workplace**	**Monday – Friday**
4 – 17	College	Monday – Friday
18 – 33	**Workplace**	**Monday – Friday**
34 – 43	College	Monday – Friday
44 – 52	**Workplace**	**Monday – Friday**

Typical Weekly Delivery Schedule Year 2 (Semesters 3 & 4)

Week Numbers	*Location*	*Days*
53 – 62	College	Monday
53 – 62	**Workplace**	**Tuesday – Friday**
63 – 78	**Workplace**	**Monday – Friday**
79 – 93	College	Monday
79 – 93	**Workplace**	**Tuesday – Friday**
94 – 104	**Workplace**	**Monday – Friday**

Occasionally, where a single employer may aim to recruit an entire participating cohort of 14+ apprentices, there is the possibility of modifying these timings in accordance with employer preferences and requirements. All programmes, regardless of specific scheduling adjustments, will complete the total required learning hours for on- and off-the-job training periods.

6. Indicative Programme Content Summary

The indicative content that forms this programme is designed to increase complexity from the first to final modules. Early programme modules are targeted towards an NFQ Level 5 standard, with later modules aligning with an NFQ Level 6 standard. This approach allows for an accessible learning experience in understanding fundamental topics, technologies, and their application in the world of ICT and is especially suited to those little prior relevant experience. Learners of all backgrounds will acquire knowledge and specific skills throughout the duration of the programme. The indicative content noted below comprises a brief snapshot of key subject matter covered in the programme's constituent modules. A complete outline of module-specific learning outcomes and aligned indicative content is available on request. As part of FIT's commitment to transparency and dynamic service provision, feedback relating to specific aspects of the programme—including possibilities for future enhancements—is always welcome.

SD-TA-001 **Software Development and Design Fundamentals**

Utilising the C# programming language, this module covers fundamental principles of software development and the range of techniques used in software design to achieve desired software solutions.

SD-TA-002 **Customer Support Provision for the ICT Professional**

In the early phase of apprentice training, employers often task apprentices with discharging technical support activities. This module will prepare the apprentice to provide technical customer support and understand the processes involved in improving customer interaction with ICT systems. In addition, this module will equip apprentices with knowledge of Level 1, Level 2, and Level 3 support activities and their relevance to specific case studies. Finally, apprentices will understand the importance of Customer Relationship Management systems in order to enhance technical support provision.

SD-TA-003 **Web Development (HTML, JavaScript, CSS3)**

This module provides an understanding and practical application of web architecture, components, and technologies. Apprentices will develop a website specification and follow through with implementing some website elements. This module also aims to provide an introduction to HTML5, CSS3, and JavaScript, focusing on using these languages to implement programming logic, deal with variables, perform looping and branching, develop user interfaces, capture and validate user input, store data, and create well-structured applications.

SD-TA-004 **Software Development Using SQL (Databases)**

This module provides apprentices with an opportunity to develop the skills required to create queries, provide reports, manipulate data, and document test results in a Relational Database Management System (RDMS).

SD-TA-005 **Data & Cybersecurity: Essentials for Programming**

This module provides an understanding of the threats to modern ICT systems in the context of data security and cybersecurity.

SD-TA-006 **Install, Configure, and Upgrade ICT Software**

This module will enable apprentices to install, configure, and upgrade software applications, as well as networked and stand-alone operating systems.

SD-TA-007 **Object-Oriented Programming (Python)**

This module will introduce apprentices to the Python programming language and the concepts of object-oriented computer programming used to refine and test computer programmes.

SD-TA-008 **Project Management and Agile Systems of Work**

This module aims to provide apprentices with an understanding of project management principles and how projects are set up and delivered in the contemporary ICT workplace. Apprentices will understand how to mitigate risks and will gain experience in employing management tools to monitor and review projects using the Agile framework. In addition, apprentices will develop essential skills to communicate through written, verbal, and non-verbal means and clearly present technical information to non-technical audiences.

SD-TA-009 **Event-Driven Programming (Python)**

This module aims to provide apprentices with a broadening capacity to utilise the Python coding language while also understanding how event-driven programming principles are used in programming and systems development. Apprentices will develop their skills to design, create, implement, and test programming solutions for given purposes.

SD-TA-010 **Procedural Programming (Python)**

This module aims to provide apprentices with an understanding of the procedural programming paradigm utilising the Python programming language. Focusing on the systematic process in which a procedural programme executes, apprentices will gain an appreciation for the many different ways problems can be solved and software can be built.

SD-TA-011 **Quality Assurance and Software Testing**

This module aims to provide apprentices with the principles of software application testing. In addition, apprentices will develop an awareness of quality assurance processes related to the publishing and deployment of software applications.

SD-TA-012 **Systems Development**

This module aims to provide apprentices with an understanding of the systems development life cycle. Using a project approach, apprentices will explore the stages in detail, including, gathering and analysing customer requirements, designing an IT solution, and planning its testing and implementation. Apprentices will identify the various stakeholder perspectives to ensure that the solution meets requirements and that the broader implications are considered. In addition, apprentices will develop practical skills in using the various tools and techniques associated with the multiple methodologies for systems development.

SD-TA-013 **Introduction to Cloud Development Practice**

This module aims to provide apprentices with the knowledge to identify key features of a cloud-based development platform while equipping apprentices with the skills to author, maintain, and debug code on a cloud-based platform. At the outset of this module, apprentices will, in conjunction with their tutor, choose a specific cloud-based vendor product to use throughout participation in this module. This choice will be identified from a FIT-approved list, which includes **Amazon AWS**, **Google Cloud Platform,** and **Microsoft Azure**. In addition, apprentices who evidence that they have completed an introductory or intermediate cloud-based industry certification from Amazon AWS, Microsoft Azure, VMware, or IBM Cloud Services are exempt from completing the FIT-devised assessment related to this module. The FIT Registrar will assess all certificates furnished and notify the tutor of the exemption. The delivery of this module will provide a facility for those wishing to sit the above vendor exams to do so within the active period of apprentice study.

SD-TA-014 **Contemporary Programming Practice**

This module aims to provide apprentices with a choice to study, in detail, a topic specific to JavaScript, Python, database management, or cloud services while building upon the knowledge, skills, and competencies gained from participation in all other preceding programme modules. At the outset of this module, apprentices will nominate a particular area of interest in one of the areas mentioned above and will be assessed by way of a tutor-devised task. FIT can also accept confirmation of completion of an intermediate-level industry recognised vendor certification in place of the FIT-devised assessment. The area of study and corresponding industry certification must be confirmed with the tutor prior to module delivery, as this will allow the programme delivery partner to make available relevant official learning resources. Acceptable industry certifications include **AWS Certified Developer, CIW JavaScript Specialist, Oracle Certified Associate Java SE 8 Programmer, Oracle Database SQL Certified Associate**, and **Python Institute Certified Associate Python Programmer**.

SD-TA-015 & SD-TA-016 **Applied Learning in the Workplace Year 1 & 2**

Within the context of a supported work environment, modules 015 & 016 aim to provide apprentices with an opportunity to demonstrate and document their application of learning in a workplace setting, relating to both occupationally specific technical and transversal skills acquisition. During the completion of these modules, apprentices will utilise an online learning logbook to document their learning journey. Workplace Mentors and the Assessor will access this platform at regular intervals. In summary, consistent with the module learning outcomes, apprentices will upload documentary evidence of completing the required technical tasks. In addition to these technical tasks, apprentices will complete and upload a transversal skills draft essay in year one. The final essay and a recorded presentation will be completed and uploaded by the end of the programme.

7. Assessment of Learning

Programme elements are assessed in different ways. During the completion of off-the-job modules, apprentices will undertake a series of assessment tasks for each module that demonstrate apprentice attainment of the required minimum standards. Apprentices complete assessments in a controlled, proctored environment that is time-bound against specific assignment briefs. Typically, assessment of a particular module is completed within the final days of delivery of that module. As apprentices progress through the programme, they will have the opportunity in modules SD-TA-013 and SD-TA-014 to complete some vendor-specific certifications, which typically necessitates attendance at a defined testing centre location. Workplace learning is monitored through the use of the logbook, where apprentices provide detailed written entries describing relevant workplace tasks of a technical nature. Entries demonstrating examples of apprentices employing transversal skills in the workplace are also required. These activities are monitored by the Workplace Learning Officer, reviewed by the Workplace Mentor, and assessed by a FIT-appointed Workplace ICT Assessor.

8. Contact Information / National Availability

The programme may commence at any point during the calendar year, depending on a wide range of factors affecting delivery and placement. Programmes typically comprise classes of 14+ apprentices. The frequency of programmes and the selected locations will be related to regional demand from employers for the Software Development Apprenticeship programme.

FIT Contact Information
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