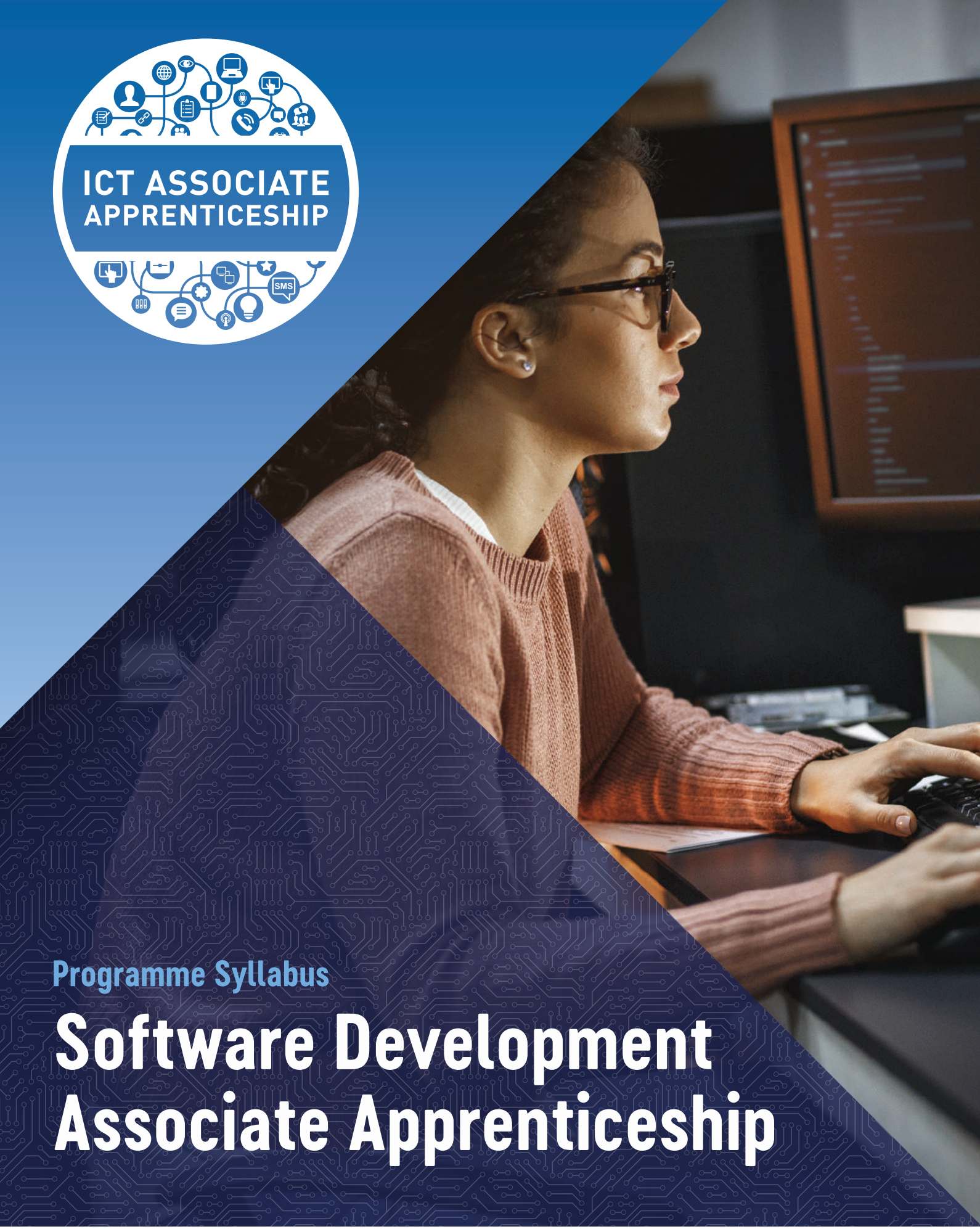
ICT ASSOCIATE APPRENTICESHIP



Programme Syllabus

Software Development Associate Apprenticeship

fit The Tech Talent Pipeline

GENERATION APPRENTICESHIP
www.apprenticeship.ie

Typical job roles in Software Development include: Application Developer, Quality Assurance Lead, Application Developer, Mobile 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. Apprenticeships are designed by industry-led groups to support growth and competitiveness. Apprentices earn while they learn, and build valuable work-ready skills in a chosen occupation.

Apprenticeships open up exciting and rewarding careers, with learning grounded in the practical experience of undertaking an employment opportunity. Helping more people discover and develop their talents through training is at the heart of the national apprenticeship system. Assisting people to find opportunities through the acquisition of tech skills is at the heart of Fastrack into Information Technology's mission and we warmly welcome you to take part in this journey with our support and encouragement.

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 who are 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. The programme provides apprentices with the theoretical and practical skills required to secure and retain employment. In early 2023 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 practice Python through several 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 and SCRUM, etc. The programme will expose apprentices to popular cloud development platforms and contemporary programming languages, also offering the opportunity to complete vendor-specific certification, as noted in Section 6.

1.2 Stakeholders and Roles

A software developer, also known as a computer programmer, builds and tests high-quality code across front-end, logic 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 a business analyst or technical architect, 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: Application Developer, Quality Assurance Lead, Application Developer, Mobile Application Developer, Games Developer, Product Lead, Project Management Lead and UI/UX Designer.

1.3 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 operation and quality assurance of the programme. FIT works closely with its training delivery partners (ETBs), employers, and regulators (Quality and Qualifications Ireland, SOLAS, 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 leads to apprentice 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.

National Framework of Qualifications

QQI
Quality and Qualifications Ireland
Dearbhú Cáilíochta agus Cáilíochtaí Éireann

2.1 Modular Components

Based on the allocation of 200 FET Credits, this programme is split into sixteen modules, SD-TA-001-SD-TA-016. Apprentices complete fourteen modules in off-the-job training mode under the guidance and direction of an off-the-job tutor. Self-directed learning hours relating to these modules are comprised of learning formation activities conducted in the workplace throughout the two-year programme. Modules SD-TA-015 and SD-TA-016 relate to on-the-job activity, specifically the demonstration and 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	Off-the-Job	15	94.5	55.5
SD-TA-004	Software Development Using SQL	Off-the-Job	10	63	37
SD-TA-005	Data and Cyber Security	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 on www.fit.ie. In the first instance, the application is subject to screening regarding the defined criteria. 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 finalised/completed, FIT will organise interviews between candidates and prospective host employers who will provide the mentored work placement opportunity to the candidate. The employer will select the applicant(s) to whom they will offer a role in their organisation as a full time employee for the duration of the programme. This decision is exclusively made by the employer and FIT has no role in influencing that decision-making process.

Since 2018, FIT has instigated several supports for candidates who may have additional support needs and who notify FIT of a disability at the candidate application stage. These supports range from assistance navigating the candidate application process to ongoing support during participation in the programme.

3.1 Specific Entry Requirements

Minimum candidate entry requirements are as follows:

- 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 to include Maths and English (Ordinary Level) in the Irish Leaving Certificate,
- Must be eligible to participate in Further Education and Training programmes,
- Must be entitled to study and work in Ireland.

Equivalence may be decided through the Recognition of Prior Learning procedure for those who may not hold a suitable Irish Leaving Certificate. In addition, those who have completed a FIT recognised Pre-Tech Apprenticeship programme will be able to furnish evidence of the same along with a copy of their Junior Certificate parchment/certificate.

Key candidate skills and attributes are as follows:

- 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, pleasant personality, be determined to succeed,
- Have excellent interpersonal skills,
- Be able to work as a team member, 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/computer programming role. Onboarded apprentices 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 technologies are used in programming and systems development.
- Design, create, implement and test programming solutions.
- Use event driven programming technologies in programming and systems development.
- Use procedural programming technologies 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 software 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: 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 the various 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.
- Develop a plan which can either be used during a course of study or as a tool for future/current career path.

5. Programme Structure

The Software Development Associate Apprenticeship programme is presented in four semesters that chart apprentice growth and progress through the programme.

Semester 1: Laying the Foundation

Apprentices will receive a 'deep dive' of technical and transversal learning in preparation for entry to the workplace. As the title suggests, the purpose of this semester is to "lay the foundation" for the technical knowledge that learners will rely on in Semester 2. It will also help apprentices "find their feet" and introduce them to fellow apprentices and tutors.

Semester 2: Introducing the Workplace

In Semester 2, the off-the-job training/activity combines with time spent in the workplace setting. Apprentices will undertake additional workplace practice to increase their knowledge and skills. The learning undertaken in the workplace will be guided by the tasks outlined in the module "Application of Skills in the Workplace Year 1". The broader purpose of this semester is to integrate apprentices fully into the workplace setting, to introduce the apprentice to their work teams and mentors, and to start applying acquired knowledge and skills. This stage builds on the technical learning undertaken in Semester 1. Off-the-job training activity will enable learners to "re-group" in a familiar setting, share workplace experiences and discuss technical matters with tutors.

Semester 3: Consolidation

Semester 3 continues the model of off-the-job training/activity and work placement. The difference in this semester is that many off-the-job modules have concluded, allowing apprentices to actively contribute to work teams enabling them to focus on consolidating theoretical learning by continuing to apply skills in the workplace. In addition, as in Semester 2, the off-the-job activity will provide a continuing opportunity for engaging with peers and tutors.

Semester 4: Preparation for Autonomy

The final semester will assist apprentices in adapting to full-time employment with more autonomy. Some time will still be allocated to engage with peer groups and tutors. During this semester, the apprentice's future path will become more apparent. It may be that the employer indicates that the apprentice will be offered a role with them upon completion of the apprenticeship. If not, the apprentice will be facilitated to seek alternate employment or further training at the end of the programme.

5.1 Specific On and Off-the-Job Timings

Depending upon noted employer need, the programme may run on either a day release or block release structure to accommodate the required off-the-job modules/elements. The format of particular cohort instance starts will be notified in advance to apprentices and all stakeholders.

Typical Day Release Arrangements*

Semester 1	20 Weeks	Full time off-the-job training Monday-Friday
Semester 2	32 Weeks	Monday day release off-the-job training each Monday for 15 weeks *Remainder of time spent full time in the workplace*
Semester 3	26 Weeks	Monday day release off-the-job training each Monday for 10 weeks *Remainder of time spent full time in the workplace*
Semester 4	26 Weeks	Monday day release off-the-job training each Monday for 15 weeks *Remainder of time spent full time in the workplace*

** May be subject to change dependant upon employer needs.*

Typical Block Release Arrangements

Block release arrangement timings may vary from intake to intake following discussion with employers and in consultation with off-the-job delivery partner, the ETBs. However, confirmed block release arrangements will ensure completion of the required total learning hours in both on and off-the-job study as these timings form critical requirements of the programme validation.

6. Indicative Programme Content Summary

The indicative content that forms this programme builds upon increasing complexity from the first to final modules. Early programme modules are targeted towards an NFQ level 5 standard, with later modules NFQ Level 6 standard. This approach allows for an accessible learning experience for those coming new to ICT to understand fundamental topics, technologies and their application while also building their knowledge and skills throughout the programme. The indicative content noted below comprises a brief snapshot of content relating to constituent programme modules. A complete outline of module-specific learning outcomes and aligned indicative content is available by request. Alternatively, FIT is always open to discussing specific programme aspects or where future enhancements can be made.

SD-TA-001 **Software Development and Design Fundamentals** (NFQ Level 5)

Utilising the C# programming language, this module covers fundamental principles of software development/programming and the application of techniques used in software design to represent software solutions.

SD-TA-002 **Customer Support Provision for the ICT Professional** (NFQ Level 5)

In the early phase of apprentice training, employers often induct apprentices into the workplace in the discharge of technical support activities. This module will prepare the apprentice to provide technical customer support and understand the processes involved in improving how customers interact with ICT systems. In addition, this module will equip apprentices with knowledge of the differing levels of customer support, such as Level 1, Level 2, and Level 3 support activities. Finally, apprentices will understand the importance of Customer Relationship Management systems as a database and within the remit of a computer programmer.

SD-TA-003 **Web Development (HTML5, JavaScript and Css3)** (NFQ Level 5)

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 HTML5/CSS3/JavaScript to implement programming logic, define and use 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)** (NFQ Level 5)

This module provides apprentices 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 and Cyber Security – Essentials for Programming** (NFQ Level 6)

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

SD-TA-006 **Install, Configure and Upgrade ICT Software** (NFQ Level 6)

This module will enable the apprentice to install, configure and upgrade software applications and networked and stand-alone operating systems.

SD-TA-007 **Object-Oriented Programming (Python)** (NFQ Level 6)

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

SD-TA-008 **Project Management and Agile Systems of Work** (NFQ Level 6)

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 develop their skills in using management tools to monitor and review projects in agile environments. In addition, apprentices will develop essential skills to communicate through written, verbal and non-verbal means and present to non-technical audiences.

SD-TA-009 **Event Driven Programming (Python)** (NFQ Level 6)

This module aims to provide apprentices with a broadening capacity to utilise the Python coding language while also understanding how event-driven programming technologies 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)** (NFQ Level 6)

This module, delivered through Python, aims to provide apprentices with an understanding of procedural programming and multi-dimensional arrays and structures. Apprentices will develop their skills to use a number of file organisations, while also creating and using file types.

SD-TA-011 **Quality Assurance and Software Testing** (NFQ Level 6)

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/deployment of software applications.

SD-TA-012 **Systems Development** (NFQ Level 6)

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, 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** (NFQ Level 6)

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 name a particular cloud-based platform vendor/product to use throughout participation in this module. This choice will be identified from a FIT-approved list, which includes **Amazon AWS**, **Microsoft Azure**, **VMware**, or **IBM Cloud Services** platforms. 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** (NFQ Level 6)

This module aims to provide apprentices with a choice to study in-depth a particular area of programming interest within the JavaScript, Python, or SQL/Database subject matter while building upon the knowledge, skills and competencies gained from participation in all other preceding on and off-the-job programme modules. At the outset of this module, apprentices will name a particular area of interest in either JavaScript, Python or SQL/Database. The assessment for this module comprises a tutor-devised task. FIT can also accept confirmation of completion of an intermediate-level cloud vendor-specific (industry-recognised certification) in place of the FIT devised assessment. However, the options must be confirmed with and organised through the tutor before module delivery to make available pertinent learning resources available for study. Acceptable industry certifications include 1. **CIW JavaScript Specialist**, 2. **Python Institute Certified Associate**, or 3. **Oracle Database SQL Associate**.

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.

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 tutor-invigilated environment that is time-bound against set and diverse assignment briefs. Typically assessment aligned to a particular module is completed within the final days of the delivery of a particular module. As apprentices progress through the programme, they will have the opportunity in modules SD-TA-012 and SD-TA-013 to complete some vendor-specific certification, which typically necessitates attendance at a defined testing centre location. Workplace learning is monitored through apprentices providing written responses regarding the completion of defined and relevant workplace tasks of both a hard technical nature and concerning the application of transversal skills. 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 15-20 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

Phone: 01 8825570 **Email:** info@fit.ie **Web:** www.fit.ie

Version 2.0

fit The Tech Talent Pipeline

GENERATION APPRENTICESHIP
www.apprenticeship.ie

SOLAS learning works®

etbi
Education and Training Boards Ireland
Boird Oideachais agus Oiliúna Éireann