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Bootcamp Curriculum Breakdown

Timings

This will be delivered in two phases:

Phase 1 (8 weeks): Foundations	Phase 2 (8 weeks): Specialist
Modern Software Engineering Foundation	Software Development
	Cloud Engineering
	Quality Engineering
	Data Engineering

Week-by-week timings can vary according to individual learners. Our coaches ensure full coverage of all areas given the progress of each learner, and the overall immersive time remains the same.

Throughout our courses we adjust the activities to ensure effective learning is achieved given normal variances between groups and in particular with customised curriculum.

Remote / On-Site Working

If you're studying for an apprenticeship with us, the bootcamp will be delivered remotely. Otherwise, you will be asked whether you would prefer to study fully remote or in a hybrid working style.

If you select hybrid, you'll agree to being in-person for the following weeks:

1–2 (fundamentals)	3–4 (core practices)	5–6 (web and databases)

During the in-person weeks, we will prioritise onsite coaching, workshops, and events. Coaches may also be available remotely and some activities may still take place remotely.

Other weeks will be coworking weeks where learners are welcome on-site to pair and collaborate Monday-Thursday, subject to space in our office. Coaches will be present onsite and remote. Workshops will take place remotely, but can be dialled into from our office.

If you study the Software Development Specialist Track, you will also need to attend in-person for the final project, weeks 7-8 of Phase 2 (weeks 15–16 overall).

For all other Specialist Tracks, Phase 2 will be delivered fully remote.

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Phase One: Modern Software Engineering Foundation

Module	Timing	Objective	Approach
Python Foundations and Developer Tools	Weeks 1 & 2	Learners can: Manipulate files and directory structures using the command line Track changes to their code using Git version control Write procedural programs	**Learner Experience** • Induction morning • Daily peer-group meetings • Introduction to Git source control exercises • Introduction to the command line exercises • Guiding material on programming • A series of programming drills and projects to complete • Responsive demonstration workshops as needed • Retrospective **Emotional intelligence & wellbeing workshops begin and continue throughout the programme.**
Engineering Practices ('Golden Square')	Weeks 3 & 4	Learners can: Apply, and explain the purpose of, four key engineering practices: test-driven development, program design, debugging, and pair programming.	**Learner Experience** • Kickoff workshop or resource on the four practices ('Golden Square') • Learners work independently in the morning and pair in the afternoons. • A series of exercises and projects to train these practices, supported by video assessment and demonstrations. • Video process assessment and feedback • Coach-led demonstrations and office hours as needed • Retrospective at the end of each week.
Database-backed Web Applications	Weeks 5 & 6	Learners can: Design multi-table databases Use SQL to query databases Integrate a relational database into a web application Explain how HTTP requests request and modify web applications Apply golden square engineering practices to a web application	**Learner Experience** • Kickoff workshop or resource at the start of each topic (Databases & Web) • Learners work independently in the morning and pair in the afternoons • A series of small exercises and projects building towards a fully fledged database-backed web application. • Supported by video demonstrations and regular supportive assessment • Video process assessment and feedback • Retrospective at the end of each week.

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Phase One: Modern Software Engineering Foundation

Module	Timing	Objective	Approach
Cloud Deployment	Week 7	Learners can: Explain how code goes from running on a computer to running on a publicly accessible server. Explain how continuous integration and deployment (CI-CD) is used in software teams. Deploy a database-backed web application to the cloud using CI-CD.	**Learner Experience** ● Kickoff workshop ● Learners work through a series of exercises teaching the different networking concepts allowing the Internet to work. ● Learners build and run a container running a simple database-backed web application. ● Learners deploy a container to the cloud using CI-CD. ● Cohort retrospective.
Engineering Project 1	Week 8	Learners can: Explain why agile processes are used in software development. Employ agile processes to build an application to a specification.	**Learner Experience** ● Kickoff workshop on teamwork ● Learners are grouped into teams and given a specification for an airbnb-style website to build together in a week. They are also given a starter-codebase in the tailored language with a popular web framework. ● This week, coaches take a more hands-off approach so that they can experience some of the pains of not applying good teamwork processes if they let them slip. ● Daily stand-ups and mini retrospectives, team organised. ● Cohort retrospective.

After this, you will progress onto one of four specialist tracks. If you're studying for an apprenticeship, this track will be decided by which apprenticeship you're on.

- Software Development (for Software Development L4 apprentices)
- Cloud Engineering (for DevOps Engineer L4 apprentices)
- Quality Engineering (for Software Tester L4 apprentices)
- Data Engineering (for Data Analyst L4 apprentices)

The exact modules, coverage, and order may vary slightly while still covering the same core learning.

Phase Two: Software Development

Module	Timing	Objective	Approach
Javascript Fundamentals / Learn a new language	Week 1	Learners can: Swiftly learn a new language; write straightforward procedural and object-oriented programs in the tailored language. Javascript is the default, but this is often tailored.	**Learner Experience** ● Daily stand-up meetings. ● Kickoff workshop on Javascript & learning a new language ● Learners work through a series of exercises and projects designed to train the target language, supported by coach-led interventions — typically responsive group coaching. ● Workshops depend on friction points in the language, typically using debugging tools and one complex language topic is included. ● Learners pair in the afternoon. ● Retrospective.
Javascript Web Applications	Week 2	Learners can: Use Javascript to build frontend web applications. Use DOM functions to amend HTML documents and add event listeners. Send HTTP API requests.	**Learner Experience** ● Daily stand-up meetings. ● Kickoff workshop on Javascript Web Applications. ● Learners work through a project to build a web application, supported by coach-led interventions — typically responsive group coaching. ● Workshops depend on friction points in the language, typically a walkthrough of the framework and async behaviour with APIs. ● Learners pair in the afternoon. ● Retrospective.
Engineering Project 2	Weeks 3 & 4	Learners can: Operate as an agile team to develop a project in a new language and stack.	**Learner Experience** ● Kickoff workshop on agile processes. ● Learners are grouped into teams, given a starter codebase and a board of tickets to implement over two weeks using an industry-ready framework. ● Tickets will be added and amended by coaches acting as product owners over the two week period, to simulate changes in requirements. ● In this week coaches pay particular attention to teamworking difficulties and propose solutions that an agile engineering team might adopt to resolve them. ● Team retrospectives

Phase Two: Software Development

Module	Timing	Objective	Approach
Mobile Applications	Weeks 5 & 6	Learners can: Build straightforward mobile applications connected to a web backend.	**Learner Experience** ● Kickoff workshop on mobile applications. ● Learners are talked through the architecture of a mobile application with a web-based backend. ● Learners take the application they built the previous week and build a straightforward native mobile application connected to their web backend. ● Workshops throughout talking through the applications as they develop. ● Team retrospectives
Final Project	Weeks 7 & 8	Learners can: Take an idea to a product using agile processes and test-driven development.	**Learner Experience** ● Kickoff workshop. ● Learners are grouped into teams and given the freedom to ideate a project to implement. ● They will use all of their learning so far on both agile processes, independent learning approaches, and engineering skills to build something that they are proud to present. ● Coaches available to help address learning obstacles. ● Final project presentations take place on the final Friday afternoon.

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Phase Two: Cloud Engineering

Module	Timing	Objective	Approach
Containers	Week 1	Learners can: Containerise an application and deploy it to AWS. Explain containers and their uses.	**Learner Experience** • Course Outline session • Welcome to DevOps workshop. • Introduction to Containers workshop. • Series of exercises in which learners deploy their first containerised app to a cloud service. • Retrospective session. **Resources & Support** • Sessions & workshops outlined above. • Coach availability to support work.
CI/CD & Serverless	Week 2	Learners can: Deploy a static website that works with a Serverless architecture to AWS using Git-based CI/CD.	**Learner Experience** • Introduction to CI/CD workshop • Serverless workshop. • Series of exercises building a Git to Serverless deployment pipeline. • Retrospective session. **Resources & Support** • Sessions & workshops outlined above. • Coach availability to support work.
Main Cloud Provider	Week 3	Learners can: Deploy a full-stack application to AWS.	**Learner Experience** • Project kickoff. • AWS IAM workshop. • Week-long project deploying a previously built application to AWS and resolve dev → deployment issues. • Retrospective session. **Resources & Support** • Sessions & workshops outlined above. • Coach availability to support work.
Infrastructure as Code	Week 4	Learners can: Deploy a full-stack application using Infrastructure as Code (IaC) tools.	**Learner Experience** • Project kickoff. • IaC workshop. • Configuration Management workshop. • Week-long project deploying a previously built application using IaC tools. • Retrospective session. **Resources & Support** • Sessions & workshops outlined above. • Coach availability to support work.

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Phase Two: Cloud Engineering

Module	Timing	Objective	Approach
Orchestration	Week 5	Learners can: Create and deploy an application composed of containers using orchestration tools.	**Learner Experience** ● Introduction to Orchestration using Kubernetes workshop. ● Project kickoff. ● Week-long project deploying a previously built application using Kubernetes and previously used tools. ● Retrospective session. **Resources & Support** ● Sessions & workshops outlined above. ● Coach availability to support work.
Securing Cloud Applications	Week 6	Learners can: Identify potential and actual security issues within a cloud deployment and apply corrective actions.	**Learner Experience** ● Introduction to Threat Modelling workshop. ● Series of exercises with example scenarios and applications for pairs of learners to investigate and take appropriate corrections using appropriate tools. ● Two coach breakdown sessions talking through exercises completed, and identifying where proposed solutions would have held up or failed. ● Retrospective session. **Resources & Support** ● Sessions & workshops outlined above. ● Coach availability to support work.
SRE Issues	Weeks 7 & 8	Learners can: Debug, resolve, and prevent common site reliability issues in a live application.	**Learner Experience** ● Project kickoff. ● Two week project in which learners are given a ‘live’ pre-built application with issues surfacing throughout the week. ● On-demand workshops as needed to facilitate learning. ● Graduation celebration. **Resources & Support** ● Sessions & workshops outlined above. ● Coach availability to support work.

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Phase Two: Quality Engineering

Module	Timing	Objective	Approach
Introduction to Java	Weeks 1 & 2	Learners can: Write straightforward programs in Java	**Learner Experience** ● Kickoff workshop on Java and the IntelliJ IDE. ● A series of short exercises building basic programming skills in Java. ● Supported by video demonstrations and pervasive assessment. ● Retrospective.
Intro to Testing	Week 3	Learners can: Evaluate the quality of software systems through testing methods. Report quality in a way that will be useful for others.	**Learner Experience** ● Induction into the quality field, its role, and a simplified framework for testing. ● Exercises applying exploratory testing to software projects of varying complexity, including generating evidence and reports. ● Supportive assessment of communication of defects. ● Retrospective.
Automating Checking	Week 4	Learners can: Use test plans manually to generate evidence and discover defects. Automate test plans to generate evidence and discover defects.	**Learner Experience** ● Kickoff on manual and automated testing (‘checking’) approaches. ● Exercises applying manual testing approaches to software projects of varying complexity, including generating evidence and reports. ● Exercises translating manual test plans to automated tests, again writing up and annotating reports. ● Retrospective.

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Phase Two: Quality Engineering

Module	Timing	Objective	Approach
Extending Testing	Weeks 5 & 6	Learners can: Use data to drive tests and discover defects and risks. Use static analysis tools to discover defects and risks. Discover performance defects and risks. Discover security defects and risks.	**Learner Experience** ● Four introductory sessions on each technique: data-driven testing, static analysis, performance, and security. ● A series of exercises and projects employing these techniques to sample applications. ● Retrospective.
Embedding Quality	Week 7	Learners can: Explain the software development lifecycle and where testing fits into it. Navigate test & software management systems.	**Learner Experience** ● Introduction to the Software Development lifecycle & agile approaches. ● Exercises supporting a team of software engineer students from our Software Engineering programmes. ● Group sessions to reflect on experiences supporting dev teams.
Engineering Project 2	Week 8	Learners can: Use test automation and collaboration skills as part of a software engineering team to ensure good quality software is delivered.	**Learner Experience** ● Introduction to working as part of an engineering team. ● Learners work embedded in an engineering team with our other software engineering students. ● Learners have regular meetings with their coach to help them work through the challenges that come up. ● Workshop on Continuous Integration. ● Workshop on Communication. ● Retrospective. ● Graduation celebration.

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Phase Two: Data Engineering

Module	Timing	Objective	Approach
Intro to Data	Weeks 1 & 2	Learners can: Conduct an exploratory data analysis Communicate insights about well-prepared data sources	**Learner Experience** • Kickoff of Data Analysis project. • Project where learners take several related datasets and are challenged to analyse and generate insights for presentation to a simulated client. • Structured challenges and ad-hoc sessions on the topics of data transformation, visualisation and statistical analysis using common Python data analysis libraries such as Jupyter, Pandas, Jupyter and matplotlib. • Coach availability for support and unblocking. • Retrospective.
SQL for Data Processing and Analysis	Week 3	Learners can: Build a metrics dashboard based on data from across multiple tables of a relational database	**Learner Experience** • Kickoff on applying data analysis to an application database using SQL. • Project where learners build a product metrics dashboard based on querying an application database containing data from the Stack Overflow archives. • Structured challenges and ad-hoc sessions on the topics of database design, SQL for data analysis and dashboard and metric design. • Coach availability for support and unblocking. • Retrospective.
Analytical Databases	Week 4	Learners can: Extract, transform, and load data from different sources into an analytical database	**Learner Experience** • Kickoff on Analytical Databases • Project where learners extract, transform and load data from various sources, including databases, third-party APIs and Cloud storage into an analytical database and connect it to a BI tool for visualisation. • Structured challenges and ad-hoc sessions on the data engineering lifecycle, writing ETL jobs and SQL query performance. • Coach availability for support and unblocking. • Retrospective.
Batch Processing	Week 5	Learners can: Batch-process Cloud data. Orchestrate and monitor data pipelines.	**Learner Experience** • Kickoff on Batch Processing. • Project where learners develop scheduled batch-processing pipelines on live Cloud data using Airflow. • Structured challenges and ad-hoc sessions on reproducibility and idempotence. • Coach availability for support and unblocking. • Retrospective.

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Phase Two: Data Engineering

Module	Timing	Objective	Approach
Data Warehouses	Week 6	Learners can: Design and build data warehouse models that meet business intelligence needs Put in place measures to monitor data quality in the data engineering lifecycle	**Learner Experience** ● Kickoff on Data Warehousing ● Project where learners transform raw data stored in a Cloud data warehouse into usable data models by applying data warehouse modelling techniques and tooling. ● Structured challenges and ad-hoc sessions on data warehouse modelling, access control and data quality testing. ● Coach availability for support and unblocking. ● Retrospective.
Stream Processing	Week 7	Learners can: Stream-process data	**Learner Experience** ● Kickoff on Stream Processing. ● Project where learners develop a stream-processing pipeline that delivers near real-time insights. ● Structured challenges and ad-hoc sessions on Kafka and on writing data transformations using a stream processing framework like Apache Spark. ● Coach availability for support and unblocking. ● Retrospective.
Final Project	Week 8	Learners can: Leverage data engineering skills for the benefit of an organisation	**Learner Experience** ● Project Kickoff ● A one week project applying the skills learned so far to a realistic simulated data engineering challenge. ● Coach availability for support and unblocking. ● End-of-programme celebration with invited colleagues.