



Graduate Certification Programme in Quality Assurance

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Assurance

2023



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Program highlights

Welcome to the Network Model Training Internship! Our program offers students an enriching and comprehensive experience in the realm of network technologies. Here are the program highlights that students can look forward to:

1. **Hands-on Experience:** Students will have the opportunity to work on real-world projects, simulations, and networking labs. This hands-on experience will enable them to gain practical skills that are crucial in the field of engineering.
2. **Industry-Relevant Curriculum:** Our curriculum is designed in collaboration with industry experts, ensuring that students learn the latest and most relevant concepts in network modelling and design.
3. **Industry Exposure:** We plan to organise guest lectures and workshops by industry professionals, providing students with insights into the current trends and demands in the networking domain.
4. **Certification Preparation:** For those interested, we will assist students in preparing for relevant industry certifications.
5. **Collaborative Learning Environment:** Our internship fosters a collaborative and supportive learning environment, encouraging students to work together, exchange ideas, and grow as a team.
6. **Mentorship and Guidance:** Each student will be assigned a mentor who will provide personalised guidance and support throughout the internship.
7. **Career Development:** We offer sessions on resume building, interview preparation, and networking opportunities to help students kickstart their careers in the field of networking.
8. **Project Showcase and Evaluation:** At the end of the internship, students will have the chance to showcase their projects to peers, mentors, and potential employers, receiving valuable feedback



Mentors and Expert

- **Nalinikanth M**
 - Lead Consultant, with overall 11+ years in IT industry and currently working as Security Specialist at ThoughtWorks
- **Sudhamsh K**
 - Lead Consultant, with overall 9+ years in IT industry and currently working as Infrastructure Consultant at ThoughtWorks
- **Anjani Kumar M**
 - Data Analyst III, with overall 9+ years in IT industry and currently working as Data Analyst at Walmart Global Tech
- **Rajesh Sheela**
 - Software Engineer III, with overall 7+ years in IT industry and currently working as Full Stack Engineer at Fanatics, Inc
- **Syed Sheeban Sadiq**
 - Senior System Engineer, with overall 7+ years in IT industry and currently working as System Engineer at Oracle
- **Raju S**
 - Implementation Coordinator, with overall 7+ years in IT industry and currently working as Implementation Coordinator at TISS
- **Anirudh K**
 - Senior Consultant, with overall 7+ years in IT industry and currently working as Quality Analyst at ThoughtWorks
- **Nitin I**
 - L2 Engineer, with overall 7+ years in IT industry and currently working as DevOps Engineer at Trianz
- **Sravan Kumar J**
 - Lead QA, with overall 7+ years in IT industry and currently working as Quality Analyst at Desynova
- **Nikhil S**
 - Senior Application Developer, with overall 7+ years in IT industry and currently working as Application Developer at Oracle
- **Akhil A**
 - Consultant, with overall 6+ years in IT industry and currently working as Software Developer at Capgemini

- **Sai Krishna K**
 - System Engineer, with overall 6+ years in IT industry and currently working as System Engineer at Oracle
- **Umar Basha**
 - Developer III, with overall 6+ years in IT industry and currently working as Full Stack Engineer at UST Global
- **Raghu Vamshi N**
 - System Engineer, with overall 4+ years in IT industry and currently working as System Engineer at Oracle
- **Sai Vineeth T**
 - DevOps Engineer, with overall 3+ years in IT industry and currently working as DevOps Engineer at Claranet
- **Amulya**
 - Analyst, with overall 3+ years in IT industry and currently working as Data Analyst at Deloitte
- **Pradeep C**
 - Developer, with overall 2+ years in IT industry and currently working as Software Engineer at Radius EduTech
- **Praneeth**
 - Software Engineer, with overall 2+ years in IT industry and currently working as Software Engineer at Covalense Global



Networked Model of Learning

A New Pedagogical Paradigm

The Networked Learning Model (NLM) is an innovative pedagogical strategy designed to harness the power of group learning, experiential learning, and mentorship. While its deployment necessitates higher initial effort compared to traditional classroom models, it offers significant improvements in learning outcomes. This paper discusses the central tenets of the Networked Learning Model, examining its components, structure, and pedagogical design, and highlights its potential applications across diverse fields from technology to philosophy.

1. Introduction

Education and learning processes have undergone substantial evolution due to technological advancements and an increased understanding of learner-centric methodologies. One such development is the Networked Learning Model (NLM), offering an enhanced, participative, and experiential learning approach. NLM breaks from traditional learning structures, replacing them with a group-based, mentor-guided learning system that promotes deep understanding and engagement.

2. Core Components of the Networked Learning Model

The Networked Learning Model (NLM) is founded on three interlocking components: Classroom Sessions, Peer-to-peer Project-Based Learning, and Mentoring. These components serve distinct yet interdependent functions, forming an integrative learning environment that stimulates critical thinking, encourages collaboration, and fosters mentor-guided learning.

2.1. Classroom Sessions

Classroom sessions, either physical or digital, form the starting point of the NLM structure. In these sessions, a Learning Leader (LL) plays a crucial role in introducing and discussing the subject matter. Unlike the traditional approach, where learners primarily play a passive role, the NLM promotes active learning. LLs invite participation from learners, thus converting the session into a dialogue instead of a monologue. The participatory nature of these sessions fosters critical thinking and engages learners more

intimately with the subject matter, thereby promoting better retention and comprehension.

The LL's role is to create an environment conducive to curiosity and exploration. They strategically break the subject matter into chapters and units, guiding learners through these components in a manner that encourages interaction and involvement

2.2. Peer-to-peer Project-Based Learning

Project-based learning, a key element in the NLM, is designed to reinforce the concepts introduced in classroom sessions. Learners are divided into small squads of approximately five members, although this can vary depending on the requirements of the project. These squads allow for intimate, effective collaboration, fostering a productive learning environment where ideas can be freely exchanged and perspectives broadened.

Each squad is tasked with a project that aligns with the subject matter taught in the corresponding classroom session. The goal of these projects is to apply theoretical concepts practically, thereby deepening understanding and knowledge. This strategy enhances learning by bridging the gap between theory and practice, facilitating a clearer grasp of real-world applications of academic concepts.

2.3. Mentoring

Mentoring is another essential component of the NLM, providing tailored guidance to each squad in their learning journey. The Squad Mentor (SM) serves as a facilitator, coach, and advisor, closely monitoring the squad's progress on their project work. They assist learners in identifying challenges, overcoming obstacles, and optimising the learning process.

The SM is also a vital link between the squad and the LL. They relay formative assessment feedback from the squad's project work to the LL. This feedback is invaluable for the LL to make necessary adjustments in teaching strategies, ensuring that the instruction remains effective and relevant. In this manner, the mentoring component not only supports learner progress but also contributes to the continuous improvement of the overall teaching approach in the NLM.

3. Pedagogical Design

The pedagogical design of the Networked Learning Model (NLM) is what truly sets it apart, fostering an environment that allows for active learning, collaboration, and continuous improvement. The design is divided into three main components: Structure, Implementation and Feedback Loop, and Connectivity Across Units.

3.1. Structure

The structure of NLM focuses on breaking the subject matter into manageable chunks. Each broad chapter is divided into smaller units, creating a systematic learning progression. This modular approach helps learners to digest and comprehend complex concepts more easily.

For each unit, a classroom delivery session is designed by the Learning Leader (LL). These sessions provide the foundational knowledge that the learners will later expand on during their project work. Corresponding to each classroom session, an activity or project is developed that ties directly to the unit's subject matter. These activities are designed to produce measurable learning outcomes, providing tangible evidence of a learner's understanding and progress.

3.2. Implementation and Feedback Loop

The Networked Learning Model operates on a cycle of teaching, learning, assessment, and feedback. The LL introduces and explains each unit in a participatory classroom session, where learners are encouraged to interact, ask questions, and discuss concepts. Following the classroom session, learners undertake project work in squads, applying the knowledge they've gained to a practical task.

The Squad Mentor (SM) plays a crucial role in this stage. They oversee the squads' progress, assess the learning outcomes of the project work, and provide valuable feedback to the learners. The SM also communicates these learning outcomes to the LL, creating a feedback loop that allows for continuous refinement of teaching strategies and adaptation to the learners' needs.

3.3. Connectivity Across Units

While each unit is designed to stand alone, they are also carefully designed to maintain a degree of interconnection. This connectivity ensures that learning is not compartmentalised, but instead builds upon previous knowledge, giving learners a holistic understanding of the subject

matter. The interconnection across units facilitates the integration of knowledge, encouraging learners to draw links between different concepts and to apply their knowledge in a broader context.

4. Assessment and Certification

Assessment is an integral part of the Networked Learning Model. It offers a concrete way to gauge learner understanding and track progress. Feedback from SMs and LLs, combined with objective results from assessments, provide a well-rounded picture of a learner's performance.

This performance information forms the basis of a holistic report card. Unlike traditional report cards that might focus solely on exam results, this holistic report card takes into account a range of factors. These can include participation in classroom sessions, contribution to squad project work, and the ability to apply knowledge practically.

Upon course completion, learners are awarded a certificate. This certificate not only serves as proof of completion but also as a testament to the learner's comprehensive understanding of the subject matter. It stands as evidence of their ability to participate actively in learning, collaborate effectively in a squad, and apply knowledge in a practical context, reflecting the core tenets of the Networked Learning Model.



Projects

In this module, we emphasise a project-based approach to enable students to apply their knowledge to real-world challenges that can bring about societally significant changes. Through hands-on projects, students will explore cutting-edge web technologies and their potential to positively impact society.

1. **Test Automation Framework Development using Selenium:**

Develop an automation framework that can be used to automate test cases for a specific application or system, say E-Commerce. This project involves selecting appropriate automation tools, designing test scripts, and implementing test automation best practices.

2. **Cloud-Based Testing Implementation:**

In this project, you can set up a cloud-based testing infrastructure to execute tests on virtual machines or containers in the cloud. This approach allows for scalability, cost-effectiveness, and easy collaboration among team members.

3. **Performance Testing and Optimization:**

Conduct performance testing on a web application or software system to identify potential bottlenecks and areas for optimization. Optimise the application based on the performance test results to improve its responsiveness and scalability.

4. **Compatibility Testing:**

Perform compatibility testing on the application to ensure it works seamlessly across various platforms, browsers, and devices. This project aims to identify and fix any issues related to cross-platform compatibility.

5. **API Testing and Validation:**

Focus on testing the APIs (Application Programming Interfaces) of a system to ensure they function as expected, provide accurate responses, and adhere to the specified standards.

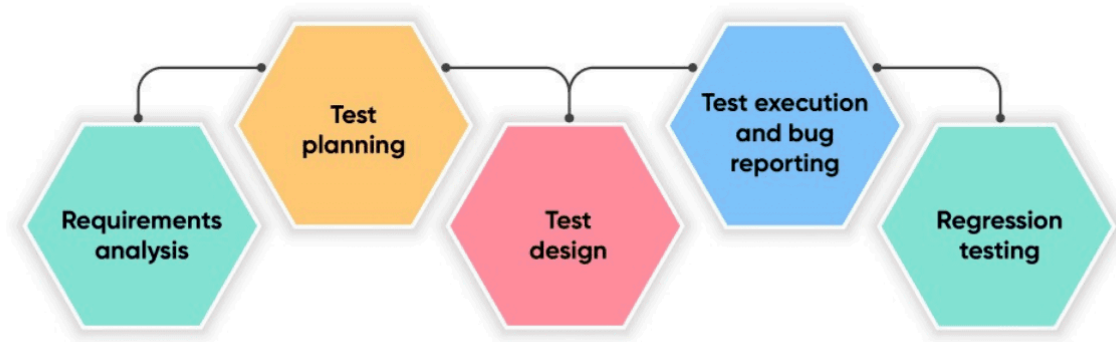
6. **Mobile App Testing:**

Test a mobile application thoroughly on different devices and operating systems. This project may include functional testing, usability testing, performance testing, and compatibility testing for mobile devices.

7. **Data Integrity and Database Testing:**

Verify the accuracy and integrity of data stored in databases. Test data migration processes, data validation rules, and data manipulation operations to ensure the data remains consistent and error-free.

Learning Path



1. Test Automation Framework Development:

- a. Learn a programming language (e.g., Python, Java, JavaScript) for writing test scripts.
- b. Understand various test automation frameworks (e.g., Selenium, Appium) and their usage.
- c. Learn how to integrate the test automation framework with a CI/CD pipeline.

2. Cloud-Based Testing Implementation:

- a. Understand cloud computing concepts, such as Infrastructure as a Service (IaaS) and Platform as a Service (PaaS).
- b. Familiarise yourself with cloud service providers (e.g., AWS, Azure, Google Cloud) and their offerings for testing and virtualization.
- c. Learn how to provision virtual machines or containers on the cloud and install the necessary testing tools and frameworks.
- d. Explore strategies for handling test data in the cloud securely.
- e. Investigate cloud-based test execution frameworks and integration with the existing test automation infrastructure.
- f. Study best practices for monitoring and managing resources in the cloud during testing.

3. Performance Testing and Optimization:

- a. Learn performance testing tools (e.g., JMeter, LoadRunner) and their capabilities.
- b. Understand performance metrics and how to interpret test results.
- c. Study techniques for identifying performance bottlenecks and optimising system performance.

4. Compatibility Testing:

- a. Learn about different platforms, browsers, and devices commonly used by the target audience.
- b. Understand cross-browser testing tools (e.g., BrowserStack, Sauce Labs) and their setup.
- c. Study techniques for troubleshooting compatibility issues.

5. API Testing and Validation:

- a. Familiarise yourself with API testing tools (e.g., Postman, REST Assured).
- b. Learn about API documentation standards like OpenAPI (formerly Swagger).
- c. Understand authentication and authorization mechanisms used in APIs.

6. Mobile App Testing:

- a. Learn about mobile testing tools (e.g., Appium, XCUITest) for Android and iOS platforms.
- b. Understand mobile app performance testing techniques and tools.
- c. Study mobile-specific challenges, such as different screen sizes and device capabilities.

7. Data Integrity and Database Testing:

- a. Learn SQL and database querying for data validation and verification.
- b. Understand data integrity constraints and how to enforce them in databases.
- c. Study techniques for testing data migration and data transformation processes.



Programming tools, Languages & Libraries

1. Programming Languages:

- a. Python: A versatile and widely-used language known for its simplicity and readability, commonly used for test automation and scripting tasks in QA.
- b. Java: A robust, object-oriented language favoured for building enterprise-level applications and popularly used for test automation in QA, especially with Selenium WebDriver.
- c. JavaScript: A programming language primarily used for web development, often employed in frontend testing and browser automation using frameworks like WebDriverIO.

2. Test Automation Frameworks:

- a. Selenium: An open-source framework used for automating web browsers, facilitating cross-browser testing and validating web applications' functionality.
- b. Appium: An open-source mobile app automation framework for testing native, hybrid, and mobile web applications on iOS and Android devices.
- c. JUnit/TestNG: Popular Java testing frameworks used for writing and executing unit tests and integrating them with automation suites.

3. Performance Testing Tools:

- a. JMeter: An open-source tool used for load testing and performance measurement of web applications and services.
- b. LoadRunner: A performance testing tool widely used for simulating user traffic and stress testing applications.

4. Compatibility Testing Tools:

- a. BrowserStack: A cloud-based tool that allows cross-browser and cross-device testing of web applications to ensure consistent performance.
- b. Sauce Labs: Another cloud-based platform for testing web and mobile applications on multiple browsers and platforms.

5. Test Pyramid:

A testing strategy that emphasises the importance of having a balanced test suite, consisting of more unit tests at the base, followed by integration tests, and finally a smaller number of end-to-end tests at the top. The pyramid helps ensure early bug detection and faster feedback loops.

6. Shift Left:

A testing approach that involves introducing testing activities earlier in the development process. It promotes collaboration between developers and testers from the project's inception, resulting in better software quality and reduced defects.

7. Cross Browser Testing:

The process of testing a web application's compatibility and functionality across different web browsers (e.g., Chrome, Firefox, Safari, Edge). It ensures a consistent user experience across various browsers and identifies any browser-specific issues that may arise.

8. STLC (Software Testing Life Cycle):

STLC is a structured approach to software testing that involves phases like requirement analysis, test planning, design, execution, and closure. It ensures systematic testing to deliver high-quality software.

9. SDLC (Software Development Life Cycle):

SDLC is a framework for software development, consisting of phases like requirements gathering, design, implementation, testing, deployment, and maintenance. It provides a structured approach to build and deliver software.

10. Test Scenarios:

Test scenarios are high-level descriptions of test conditions and objectives used to guide the creation of detailed test cases. They cover various functionalities of the software application.

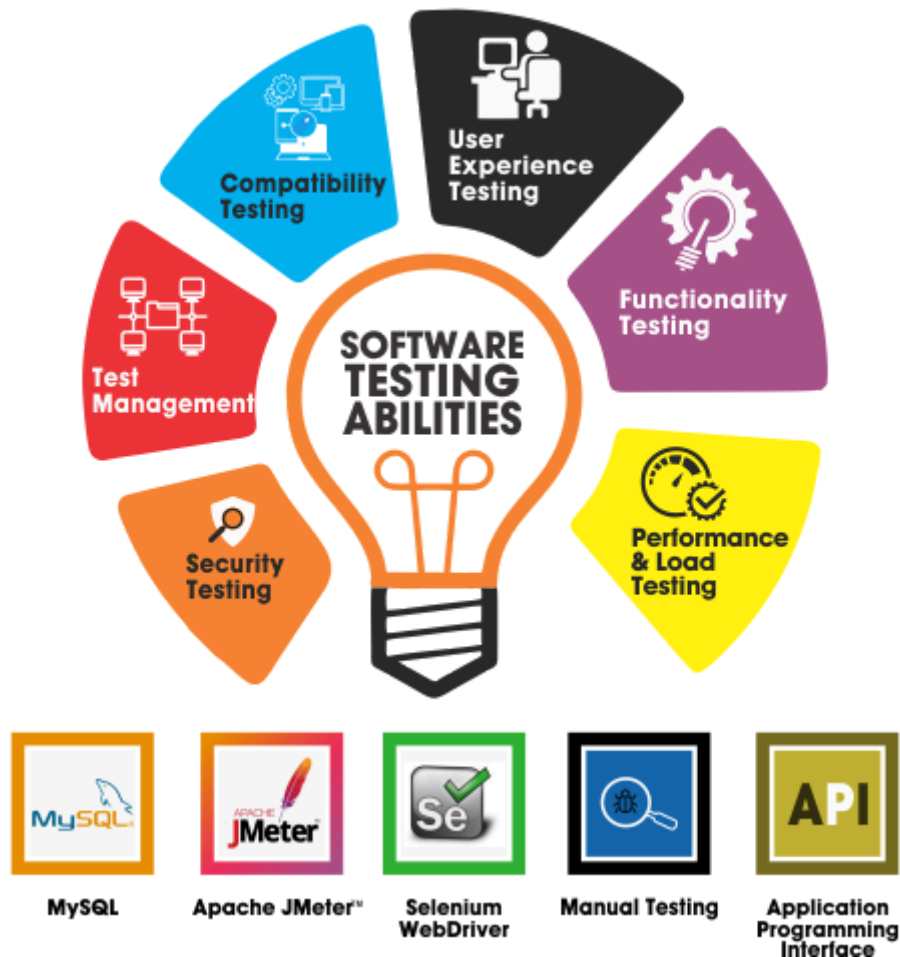
11. Test Cases:

Test cases involves creating detailed step-by-step instructions to execute specific test scenarios. Each test case includes preconditions, test steps, and expected outcomes.

12. Jira / Trello boards:

Jira and Trello are project management tools used in software testing. Jira is for issue tracking and bug reporting, while Trello offers visual project organisation using boards and cards.

Detailed Program Curriculum



1. Software Testing Life Cycle (STLC)

- Requirement Analysis: Understanding the project requirements, scope, and testing objectives.
- Test Planning: Creating a detailed test plan outlining test scope, resources, schedule, and test deliverables.
- Test Design: Creating test scenarios and test cases based on requirements and specifications.
- Test Environment Setup: Preparing the test environment with the necessary hardware and software configurations.
- Test Execution: Running test cases, reporting defects, and verifying fixes.
- Test Closure: Analysing test results, generating test reports, and concluding the testing phase.

2. Software Development Life Cycle (SDLC):

- a. Requirements Gathering: Collecting and documenting user requirements and project scope.
- b. Design: Creating the architecture and design specifications based on the requirements.
- c. Implementation: Writing and coding the software based on the design.
- d. Testing: Verifying and validating the software to ensure it meets the specified requirements.
- e. Deployment: Releasing the software to end-users.
- f. Maintenance: Enhancing and supporting the software after deployment.

3. Test Scenarios & Test Cases

- a. Test Execution: Running test cases, recording test results, and logging defects.
- b. Test Design: Writing effective test scenarios and understanding test case formats.

4. Jira / Trello Boards:

- a. Jira: It offers features for issue tracking, bug reporting, and project management. Testers can use Jira to log defects, assign tasks, track progress, and collaborate with developers and stakeholders.
- b. Trello: Trello provides a visual project management approach using boards, lists, and cards. Testers can use Trello boards to organise test scenarios, test cases, and track testing progress.

5. Sprint Plannings:

Sprint planning is a crucial part of Agile development, where the development team and testing team collaborate to determine the tasks and user stories to be delivered in a sprint (typically a 2-4 week development cycle). During sprint planning, user stories are selected from the product backlog, and tasks are assigned to team members based on priorities and capacity.

6. Introduction to Test Automation:

- a. Understanding the need for test automation.
- b. Benefits and challenges of test automation.
- c. Selecting test cases for automation.

7. Programming Language Fundamentals:

- a. Basics of Python or Java (based on learner's preference).
- b. Variables, data types, loops, and conditionals.
- c. Functions and exception handling.

8. Introduction to Selenium WebDriver:

- a. Setting up Selenium WebDriver in a project.
- b. Locating elements using various locators.
- c. Performing actions (click, type, select) on web elements.

9. Test Automation Framework Design:

- a. Understanding different types of test automation frameworks (e.g., data-driven, keyword-driven, page object model).
- b. Implementing a simple test automation framework.

10. Test Execution and Reporting:

- a. Running test cases and test suites.
- b. Generating test reports.
- c. Integrating with CI/CD pipelines.

11. Introduction to Performance Testing:

- a. Understanding performance testing concepts (load, stress, endurance).
- b. Importance of performance testing in identifying bottlenecks.

12. JMeter Fundamentals:

- a. Installing and configuring JMeter.
- b. Creating test plans and test scripts.
- c. Simulating different user scenarios.

13. Analysing Test Results:

- a. Interpreting JMeter test results.
- b. Identifying performance bottlenecks.

14. Postman and REST Assured:

- a. Configuring Postman for API testing.
- b. Writing API tests using REST Assured in Java.

15. Introduction to Mobile App Testing:

- a. Understanding mobile application testing challenges.
- b. Different types of mobile apps (native, hybrid, web).

16. Appium and XCUITest:

- a. Setting up Appium for Android and iOS testing.
- b. Writing test scripts using XCUITest for iOS.

17. Introduction to Version Control:

- a. Understanding version control concepts.
- b. Benefits of using version control systems (Git, SVN).



Career Support

Welcome to our comprehensive Career Support program, designed to empower and equip you with the skills and resources needed to thrive in the professional world. Our aim is to provide holistic assistance throughout your career journey, from job search to excelling in your chosen field. Here's what you can expect from our Career Support program:

1. Job Opportunities: We understand that finding the right job can be challenging, so we offer personalised job assistance tailored to your career aspirations. Our dedicated team works closely with leading companies and industries to connect you with relevant job openings that match your skills and interests.

2. Interview Preparation: We believe that preparation is key to acing interviews. Our interview preparation sessions cover various aspects, including common interview questions, behavioural interviews, technical assessments, and how to showcase your strengths effectively. We'll equip you with the confidence and skills to excel in any interview situation.

3. Just in Time Interview (JIT): Sometimes, opportunities arise unexpectedly. With our Just in Time Interview sessions, you'll be ready to seize those moments with poise. Our experienced coaches will provide last-minute interview preparation and guidance, ensuring you can confidently tackle any interview at a moment's notice.

4. High Performance Coaching: We believe in your potential for greatness. Our High Performance Coaching sessions focus on unlocking your full potential, overcoming obstacles, and developing a growth mindset. Our coaches will guide you to excel in your career by enhancing productivity, time management, and resilience.

5. Career Mentorship Sessions: Building a successful career is a journey, and guidance from experienced mentors can make all the difference. Our mentorship sessions pair you with seasoned professionals who have excelled in your field of interest. They'll provide valuable insights, career advice, and help you navigate through challenges.



Why us?

- **Tailored Approach:** We recognize that each individual's career path is unique. Our support is personalised to meet your specific needs, helping you carve out a path that aligns with your goals.
- **Industry Connections:** We have strong connections with various industries, enabling us to offer you exclusive access to job opportunities and insights into market trends.
- **Holistic Development:** Our support goes beyond just finding a job. We focus on your long-term career growth and personal development, ensuring you are well-equipped to thrive in the professional world.
- **Lifetime Access:** Our Career Support doesn't end after you secure a job. As a part of our community, you'll have lifetime access to resources, workshops, and networking opportunities to help you progress in your career.



Masterclasses

Welcome to our exclusive Masterclasses, where we bring together top industry experts and influential guests to engage and inspire our students. Our Masterclasses are designed to provide a unique and enriching learning experience, offering invaluable insights from the very best in their respective fields. Here's what you can expect from our Masterclasses:

1. Expert Speakers: Our Masterclasses feature renowned experts, thought leaders, and industry pioneers who have achieved remarkable success in their careers. These speakers bring a wealth of knowledge and real-world experiences, sharing their journeys and valuable advice with our students.

2. Interactive Sessions: We believe in fostering meaningful interactions. During our Masterclasses, students have the opportunity to engage in Q&A sessions and discussions with the esteemed speakers. This allows for a dynamic exchange of ideas and insights, creating an immersive learning environment.