BACKGROUND

Sector	Infocomm Technology (ICT)
Industry Overview *(Brief description of the sector)*	The Infocomm Technology (ICT) sector continues to play a key role in Singapore's economic development. According to the IMDA's Annual Survey on Infocomm Media Manpower for 2019, the number of ICT professionals employed grew by 8,100 (4.3%) from 2017 to reach 197,500 in 2018. Together with 18,700 Infocomm job vacancies, total demand of Infocomm professionals increased by 6.7% from 2017 to reach 216,200 in 2018. Demand for Infocomm professionals is projected to grow by another 61,600 in the next 3 years (2019 – 2021). Singapore is poised to become the world's first Smart Nation which aims to develop Singapore's capabilities in pervasive connectivity, and build new infrastructure and common technical architecture to enable citizens, businesses and government agencies to leverage technology to make lives better. This initiative would increase the demand for ICT professionals in the areas of Software and Applications, Network and Infrastructure and Critical Emerging Technology (such as Business Analytics and Cyber Security).

JOB DETAILS

Job Title *(Upon Completion Of Programme)*	Full Stack Web Developer
Nature Of Job	• Analyse user and business requirements • Manage the design of software • Design user interface (UI) architecture and strategy • Conduct usability testing on user interfaces (UIs) • Manage software construction processes • Conduct testing & Resolve system issues • Develop documentation
Monthly Gross Salary	$4,000* **Starting salary will differ with skills, experience and qualifications.*

Job Requirements	NA

COURSE DETAILS

Programme Name	**PCP for Full Stack Web Developer**
Programme Overview	Lithan's NICF-Advanced Certificate in Infocomm Technology (Software and Applications) course provides a specialist work-related programme of study that covers the key knowledge, understanding and practical skills required in the computing sector and offers specialist emphasis in the area of Web Application Development. Learners can explore opportunities to apply their skills and knowledge at workplace through formal work placements or internships Learners will be able to gain fundamental knowledge and skills required to develop web applications using HTML< CSS, JavaScript, jQuery, jQueryUI, Angular, MySQL, Struts. <u>Module 1: Programming Foundations</u> By the end of this unit, the learner should be able to have the following knowledge: ▪ Design requirements for simple, basic software components ▪ Basic software design tools and techniques. Types of controls elements and features in software ▪ Indicators of software functionality and interoperability ▪ Documentation of design details By the end of this unit, the learner will be assessed on the following abilities: ▪ Design a simple software component or interface according to functional specifications and business requirements ▪ Utilise appropriate software design methods and tools, in line with the organisation's software design practice and principles ▪ Identify relevant controls, elements and features to be included in the software to meet its design objectives ▪ Assess functionality and interoperability of different elements or components in the software design ▪ Produce detailed design documentation mapped to user specifications <u>Module 2: Front End Web Developer</u> By the end of this unit, the learner should be able to have the following knowledge: ▪ Information flows in user interface design ▪ Key technical components in and supporting a user interface ▪ Basic methodologies in graphical user interface development

	By the end of this unit, the learner will be assessed on the following abilities: ▪ Assemble a list of functionalities and needs required ▪ Identify information flows. Develop components of user interface prototypes ▪ Design graphic user interfaces (GUIs), according to clear guidelines and specifications, making tweaks where required ▪ Evaluate the effectiveness of user interface design according to the metrics set ▪ Document changes or updates to software / applications' user interface design ▪ Craft information content and materials for the product user guide <u>Module 3: UI Frameworks</u> By the end of this unit, the learner should be able to have the following knowledge: ▪ Techniques for gathering and analysing user feedback ▪ Indicators of user experience ▪ Steps in the user interaction process ▪ Parts of a user flow chart ▪ Tests for software / application design ▪ Types of user response By the end of this unit, the learner will be assessed on the following abilities: ▪ Gather inputs and feedback from users on their needs and experiences with IT products and services ▪ Analyse user patterns and feedback from target users of IT products and services to understand the desired user ▪ experience and outcomes ▪ Identify performance levels and gaps between current level of user experience and the desired user experience ▪ Measure the user's level of engagement and stickiness with the product or service using pre-defined metrics or ▪ guidelines ▪ Measure indicators of general user response to the product or service ▪ Develop a prototype / wireframe of the user interface based on established requirements and methodologies and ▪ taking into account user centred inputs and perspectives ▪ Propose suggestions and modify aspects of an IT product or service to enhance the overall user experience ▪ Implement usability tests on the updates or modifications made to a software and application design, to verify its technical viability and effectiveness <u>Module 4: Database Design and Implementation</u>

	By the end of this unit, the learner should be able to have the following knowledge: ▪ Different kinds of data and their requirements ▪ Elements of database schemas ▪ Various fields and components of database models ▪ Mechanisms and processes for data maintenance, storage and retrieval ▪ Data warehousing processes By the end of this unit, the learner will be assessed on the following abilities: ▪ Identify requirements of various structured and unstructured data ▪ Draft database schemas within design constraints, to meet business / information needs ▪ Incorporate parameters and fields for database models ▪ Implement mechanisms for the maintenance, storage and retrieval of data from database models ▪ Perform data warehousing, aggregating data from multiple specified sources ▪ Translate project specifications, objects and data models into database structures <u>Module 5: Web Development Foundations</u> By the end of this unit, the learner should be able to have the following knowledge: ▪ Application development tools and methodologies ▪ Syntax and structures of commonly-used programming languages and their respective Application Programming Interfaces (API) ▪ Tools and techniques required for performing coding / programming ▪ Organisational standards in application development and documentation ▪ Process of embedding user interface templates ▪ Software tests and process for executing unit testing ▪ Application development standards ▪ Commonly-encountered application errors ▪ Basic debugging tools and techniques By the end of this unit, the learner will be assessed on the following abilities: ▪ Develop / programme simple applications or components according to agreed specifications ▪ Reuse externally developed components in creation of applications ▪ Embed user interface templates into applications according to design guidelines and specifications ▪ Run routine software tests to identify defects or errors ▪ Perform unit testing of each unit of the codes to ensure that the code works according to application requirements

	▪ Apply basic debugging tools and techniques to reproduce, simplify and resolve application errors or problems ▪ Make simple revisions and modifications to existing application ▪ Add new application components or features, according to endorsed recommendations ▪ Document the internal design of the application for future maintenance and enhancement ▪ Write application programming interfaces (APIs) <u>Module 6: Capstone Project using Java</u> By the end of this unit, the learner should be able to have the following knowledge: ▪ Different types or levels of testing over product life stages ▪ Range of tests, testware and their applications ▪ Optimal scheduling times for different tests ▪ Critical components of a phase test plan ▪ Different means for executing test scripts By the end of this unit, the learner will be assessed on the following abilities: ▪ Determine the requirements and specifications of applications or systems to be tested ▪ Propose relevant tests for applications or systems to achieve the testing objectives ▪ Identify points across the different product life stages for optimal scheduling of tests and verification of different requirements ▪ Develop a phase test plan ▪ Assess appropriate way for executing test scripts through manual, automated or mixed
Qualification / Certificate Name	NICF-Advanced Certificate in Infocomm Technology (Software and Applications)
Course Pre-Requisites *(e.g.: Academic qualifications, prior experience, etc.)*	Interested individuals and employers need to meet the following criteria: **<u>Individuals</u>** The Programme is open to all company-sponsored applicants who meet the following General Eligibility Criteria: • Singapore Citizen (SC) or Permanent Resident (PR); • Minimum 21 years old; • Graduated or completed National Service, whichever is later, at least two years prior at the point of application • Not in a same job role prior to joining the PCP; • New hires should be hired for not more than three months; • New hires must not be in the same job role prior to joining the PCP;

	• New hires must not be a shareholder of the PCP company, or its related companies;
	• New hires must not be related to the owner(s) of the PCP company; and
	• New hires must not be immediate ex-staff of PCP company or its related companies.
	
	Course-Specific Entry Criteria:
	
	• Enrolment for the PCP is subject to employer's selection based on job requirements, and hiring process that may include screening tests and interviews.
	• Enrolment for the PCP is subject to course pre-requisites.
	
	Employers
	
	• Be registered or incorporated in Singapore;
	• Ensure that new hires cannot be:
	  ○ A shareholder of the PCP company, or its related companies;
	  ○ Related to the owner(s) of the PCP company; and
	  ○ Immediate ex-staff of PCP company or its related companies;
	• Offer a full-time PMET position employment contract on permanent terms or on contract terms that are no less than one (1) year;
	• Be committed to work with WSG and its appointed Programme Manager on the necessary administrative matters related to the PCP;
	• Offer employment directly related to the job which the PCP is for, with remuneration that is aligned with the market rate; and
	• Commit to the PCP training arrangements for the trainees.

APPLICATION DETAILS

How To Apply For The Programme	**Applicants** Interested applicants can visit www.wsg.gov.sg/pcp to apply. Suitable applicants will be shortlisted by participating employers for interview before embarking on the programme. **Employers** Interested employers can contact Lithan Academy (Programme Manager) to register as participating companies. Email: **info@lithan.com**