LITHAN

EDUCLAAS® digital skilling

PROFESSIONAL DIPLOMA IN FULL STACK WEB DEVELOPMENT

Course Overview

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1. Course Overview

Headings	Details
Course Code	PDWD
Product Title (Internal)	Professional Diploma in Full Stack Web Development
Course Title (External)	(SCTP) Professional Diploma in Full Stack Web development (E-Learning)
Learning Mode	Full-time/ Part-time
Delivery Mode	Synchronous & Asynchronous E-learning
Target Persona	• Aspiring tech professionals seeking an entry-level position as a Full Stack Web developer • Individuals looking to transition their career into the software development & Implementation field.
Entry-Prerequisites	• Academic: Minimum one credit in Nitech in STEM or its equivalent • English Proficiency – Minimum IELTS 5.5 or its equivalent • Age – Minimum 21 years • Work Experience – Not mandatory
SSG Course Reference No	TGS-2023019545
Course Validity Date	31 Jan 2025
Course Developer	Lithan Academy
Relevant Job roles after completion of the course	Full Stack Web Developer

2. Course Brief

The "Professional Diploma in Full Stack Web Development" equips learners with comprehensive skills and knowledge to pursue rewarding careers in the dynamic field of web development. Graduates of this program will have abundant job prospects and a wide range of opportunities. They will be well-prepared to take on various job roles, such as Full Stack Web Developer, Front-End Developer, Back-End Developer, and Application Developer, among others. With their newfound expertise, learners will have the capacity to produce enterprise level applications to optimise their business process and enhance the productivity, positioning themselves as valuable resources for organizations seeking high-calibre full-stack web development professionals.

The course comprises several modules that cover a wide array of topics. The User Interface Design module emphasizes essential skills in web design, front-end development tools, frameworks, and libraries. They will acquire the expertise to create visually appealing websites that deliver seamless experiences and optimizing performance.

The Programming Fundamentals module provides a solid programming foundation by covering programming basics, object-oriented programming, and testing techniques. Learners will develop skills in writing efficient and well-documented code, enabling them to confidently tackle complex programming challenges. Emphasis is placed on coding practices that promote efficiency, maintainability, and scalability.

The User Experience Design focuses on design thinking, prototyping, and advanced prototyping techniques. Learners will acquire skills in publishing prototypes and developing human-centric interfaces that effectively communicate information, offer intuitive navigation, and optimize usability. Graduates demonstrate a commitment to continuous testing and iteration, ensuring exceptional user experiences across devices and platforms.

The Database Design module covers fundamentals and practical implementation of databases. Learners gain expertise in database design, normalization techniques, and both relational and NoSQL databases. They develop skills in testing, documentation, and constructing robust and efficient database systems.

The Web Development Design module equips learners with the essential skills for creating dynamic web applications. Learners gain expertise in SDLC & Technical Design, back-end development, MVC pattern implementation, CRUD application development using frameworks, and comprehensive testing and documentation. By mastering these skills, learners can design and develop robust web applications that meet industry standards.

The Capstone Project - Application Development module provides learners with an opportunity to apply their acquired knowledge and skills in developing a scalable and reliable applications to solve real-world problems. Through this hands-on project, learners demonstrate their proficiency in all aspects of applications development, and project management to deliver high-quality and fully functional applications.

The Enterprise Software Design module empowers learners with the skills to design robust software applications for enterprise environments. Topics covered include business requirement analysis, feasibility study, data modelling, software architecture design, and user experience (UX) design. By

mastering these skills, learners can create software solutions that align with business needs and deliver optimal user experiences in enterprise settings.

The Enterprise Software Development module provides learners with the essential skills to develop and deploy enterprise-level software solutions. The topics covered include enterprise software development, designing software architecture, implementing business logic and integration, user interface development, testing, deployment, and maintenance. By mastering these skills, learners become proficient in creating and managing software applications that meet the demanding needs of enterprise environments.

The API development module equips learners with the essential skills for integrating software applications and systems within an organization. Learners explore different integration techniques, including API integration, web services, data integration, and security measures. By mastering this module, learners gain the expertise to design and implement seamless integration solutions that optimize organizational efficiency and productivity.

The Software Testing & Problem Solving module emphasizes quality assurance and reliability of software applications. Learners acquire knowledge in various testing techniques, including test automation and performance testing, to validate functionality and performance. They also develop skills in problem management, issue resolution, and test reporting to effectively communicate testing results and measure application success.

The Capstone Project-Application Implementation module is the culmination of the Full Stack Web Development course. In this module, learners apply their acquired knowledge and skills to undertake a comprehensive application implementation project to tackle real-world software implementation challenges in the field of full-stack web development.

In summary, the "Professional Diploma in Full Stack Web Development" offers a comprehensive curriculum that covers all aspects of full-stack web development. Upon completion of this course, learners will possess the necessary skills and knowledge to excel in the industry and contribute to the development of innovative web applications and enterprise software solutions.

3. Course KSA Summary

Knowledge Statements:

- Explain the concepts and principles of application design, development, and integration methodologies.
- List the advantages and disadvantages of various program paradigms, software development life cycles, and testing methods.
- Recognize UI/UX principles and to develop customer-centric, and data-driven applications.
- Articulate the use of design patterns, frameworks, and testing methods to ensure that the developed applications meet high standards of quality and reliability.
- Demonstrate strong problem-solving and critical thinking skills to analyze complex situations, identify innovative solutions, and make informed decisions.

Skills Statements:

- Assess software requirements to identify possible implementation obstacles and select the most suitable approach for resolving them.
- Choose suitable tools, techniques, design patterns, frameworks, and software methodologies to develop robust and efficient applications.
- Develop secure and scalable applications that prioritize customer satisfaction and align with business user requirements.
- Strategize and execute appropriate testing methods, procedures, and tools to ensure the software's quality and reliability.
- Apply strong problem-solving and critical thinking skills to analyse complex situations, identify innovative solutions, and make informed decisions.
- Provide effective customer service and support, including IT issue troubleshooting and documentation.
- Apply critical thinking and problem-solving skills to identify and resolve operating system and network-related issues.

Ability Statement:

Create high-quality and reliable applications that adhere to functional, non-functional, technical, security, interface, maintenance, legal, ethical, and intellectual property requirements, while prioritizing user-centric design and robustness.

4. Course Summary

4.1 Module-Session Details

Sl No	Module Names	Learning Activity						
		Module Code	E-Learning (Async)	Flipped Class (Sync)	Mentoring Support (Sync)	Mentoring Support (Async)	Assessment (Sync)	Total Hours
1	User Interface Design (Bundled) (SF)	SCTP-WD 01	6	9	15	40	0.5	*70.5*
2	Programming Fundamentals (Bundled)(SF)	SCTP-WD02	6	9	15	40	0.5	*70.5*
3	User experience design (Bundled) (SF)	SCTP-WD03	6	9	15	40	0.5	*70.5*
4	Database Design principles (Bundled) (SF)	SCTP-WD04	6	9	15	10	0.5	*40.5*
5	Web Development design (Bundled) (SF)	SCTP-WD05	6	9	15	40	0.5	*70.5*
6	Capstone Project - Application Development (Bundled) (SF)	SCTP-WD06	-	-	18	82	0.5	*100.5*
7	Enterprise Software Design (Bundled) (SF)	SCTP-WD07	6	9	15	10	0.5	*40.5*
8	Enterprise Software Development (Bundled) (SF)	SCTP-WD08	9	12	21	68	0.5	*110.5*
9	API Development (Bundled) (SF)	SCTP-WD09	6	9	15	40	0.5	*70.5*
10	Software Testing & Problem Solving (Bundled) (SF)	SCTP-WD10	6	9	15	40	0.5	*70.5*
11	Capstone Project- Enterprise Software Implementation (Bundled) (SF)	SCTP-WD11	0	0	24	66	0.5	*90.5*
	TOTAL		**57**	**84**	**183**	**476**	**5.5**	**805.5**

4.2 Learning Mode & Duration

Learning Mode	Course Duration	Guided Learning Hours	Hours/Week	days/Week	Hours/Day
Full-time	5 months	800 hours	40 hours/week	5 days/week	8 hours/day
Part-time	9 months	480 hours	12 hours/week	4 days/week	3 hours/day

5. Module Details – User Interface Design

5.1 Module Brief

In the User Interface Design module, learners will acquire a deep understanding of user interface design principles, UI development tools, techniques, libraries, frameworks, single-page application development and testing. The instructional units equip them with the knowledge necessary to create interactive user interfaces and deliver seamless experiences. By engaging in practical exercises and hands-on activities, learners develop a high level of proficiency in creating visually appealing websites that adhere to the best UI design principles, leveraging front-end tools, techniques, frameworks, and libraries.

The module project provides learners with an opportunity to demonstrate their skills in analysing business requirements and transforming them into visually appealing website designs. Their expertise in UI development tools, techniques, and responsive design allows them to apply the most effective UI design principles, resulting in the creation of responsive websites with interactive features that enhance user engagement. Additionally, graduates showcase their ability to optimize website performance for swift loading times and seamless navigation. In conclusion, learners acquire the ability to develop responsive websites that deliver optimal performance and an enhanced user experience, positioning themselves competitively in the field of front-end development.

Instructional Units:

1. User Interface Design Principles
2. Mark-up & Styling Languages
3. Responsive Design
4. Scripting & Single Page Application
5. Testing & Documentation

Module Project:

Project Objective: Develop multi pages websites by using responsive design frameworks & libraries with optimal performance and enhanced user experience.

Project Tasks:

1. Task 1: Apply critical thinking skills to formulate a requirements specification with business requirements.
2. Task 2: Design the information architecture, wireframe, and storyboard using analytical and creative skills.
3. Task 3: Implement a website that fulfils the business requirements.
4. Task 4: Evaluate the effectiveness of the user interface for performance
5. Task 5: Apply problem-solving and evaluation skills to enhance the websites based on measured UI effectiveness metrics and test results

5.2 Module Session Plan

Session No#	Session Type	Day no#	Duration Hrs
1	E-Learning on IU 1& 2	1	2
2	Flipped Class on IU 1 & 2	1	3
3	Mentoring Support - Assignment on IU 1& 2	2	3
4	Mentoring Support -Additional Practice -1	2	6
5	E-Learning on IU 3 &4	3	2
6	Flipped Class on IU 3&4	3	3
7	Mentoring Support - Assignment on IU 3&4	4	3
8	Mentoring Support -Additional Practice -2	4	6
9	E-Learning on IU 5	5	2
10	Flipped Class on IU 5	5	3
11	Mentoring Support - Assignment on IU 5	6	3
12	Mentoring Support -Additional Practice -3	6	6
13	Mentoring Support – Project Planning -1	7	3
14	Mentoring Support – Projects Implementation 1	8	3
15	Mentoring Support – Projects Implementation 2	8	2
16	Mentoring Support -Additional Practice -4	8	6
17	Mentoring Support – Project Planning -2	9	3
18	Mentoring Support – Projects Implementation 3	10	3
19	Mentoring Support – Projects Implementation 4	10	2
20	Mentoring Support -Additional Practice -5	10	6
21	Summative Assessment (per learner)	11	30 min

6. Module Details – Programming Fundamentals

6.1 Module Brief

The Programming Fundamentals module equips learners, regardless of their coding experience, with essential knowledge and skills to start their coding journey. This module provides a comprehensive understanding of programming concepts and techniques, encompassing programming languages, paradigms, and program execution. By establishing a solid foundation in programming principles and terminology, learners can grasp and analyse code effectively. By engaging in practical exercises and hands-on activities, learners enhance their problem-solving and critical thinking abilities, thereby improving their coding proficiency and enabling them to produce efficient and well-structured code.

The module project provides learners with an opportunity to demonstrate their skills into practice by constructing software components. This project serves as a platform for demonstrating their competence in analysing technical requirements and converting them into resilient designs. Leveraging their expertise in programming paradigms and languages, learners can implement software components based on the technical design. Additionally, they acquire the capability to ensure software quality through the utilization of diverse testing methods. In conclusion, learners acquire the capacity to produce well-structured code, apply object-oriented programming principles, conduct comprehensive testing, and proficiently document their code, establishing a solid foundation for their future programming ventures.

Instructional Units:

1. Introduction to Programming
2. Programming Fundamentals - Part 1
3. Programming Fundamentals - Part 2
4. Object Oriented Programming
5. Testing & Documentation

Module Project:
Project Objective: Create software components in accordance with the technical design, ensuring the fulfilment of business requirements through the adoption of software design principles and interfacing techniques

Project Tasks:

Task 1: Create a comprehensive system requirements specification to address the functional, technical, and interface requirements.

Task 2: Devise the necessary software components to meet the specified system requirements.

Task 3: Choose the appropriate tools and frameworks needed for the development process.

Task 4: Implement the software components based on the established design.

Task 5: Conduct a thorough evaluation of the implemented solution.

6.2 Module Session Plan

Session No#	Session Type	Day no#	Duration Hrs
1	E-Learning on IU 1& 2	1	2
2	Flipped Class on IU 1 & 2	1	3
3	Mentoring Support - Assignment on IU 1& 2	2	3
4	Mentoring Support -Additional Practice -1	2	6
5	E-Learning on IU 3 &4	3	2
6	Flipped Class on IU 3&4	3	3
7	Mentoring Support - Assignment on IU 3&4	4	3
8	Mentoring Support -Additional Practice -2	4	6
9	E-Learning on IU 5	5	2
10	Flipped Class on IU 5	5	3
11	Mentoring Support - Assignment on IU 5	6	3
12	Mentoring Support -Additional Practice -3	6	6
13	Mentoring Support – Project Planning -1	7	3
14	Mentoring Support – Projects Implementation 1	8	3
15	Mentoring Support – Projects Implementation 2	8	2
16	Mentoring Support -Additional Practice -4	8	6
17	Mentoring Support – Project Planning -2	9	3
18	Mentoring Support – Projects Implementation 3	10	3
19	Mentoring Support – Projects Implementation 4	10	2
20	Mentoring Support -Additional Practice -5	10	6
21	Summative Assessment (per learner)	11	30 min

7. Module Details – User Experience Design

7.1 Module Brief

The User Experience Design module provides learners with the necessary expertise to create exceptional user experiences by utilizing popular prototyping tools and UI frameworks. Through the instructional units, learners acquire a thorough comprehension of design thinking methodologies, UI heuristics, visual design principles, user experience design metrics, prototyping techniques, publishing prototypes, usability testing, and documentation. By actively participating in practical exercises and hands-on activities, learners enhance their proficiency in UX research techniques, including conducting user interviews, surveys, and usability testing, which are crucial for gathering insights and validating design decisions. Furthermore, the module emphasizes the significance of adhering to accessibility standards and guidelines to ensure inclusive design practices.

During the module project, learners demonstrate their proficiency in creating high-fidelity prototypes, which gives them a competitive advantage in the field of user experience design. The project serves as a platform for showcasing their skills in conducting user research, creating personas, wireframing, prototyping, and conducting usability testing. UX designers dedicate themselves to understanding user needs, organizing information, defining interactions, and enhancing the user interfaces. They prioritize accessibility and visual design, iterate on designs based on user feedback, and collaborate effectively with stakeholders and development teams. IN conclusion, learners gain the capability to pursue roles in UI/UX design and development and contribute to the creation of exceptional user experiences.

Instructional Units:

1. Persona creation
2. Information Architecture and Interaction Design
3. Visual Design and Branding
4. Prototyping
5. Usability Testing & Documentation

Module Project:

Project Objective: Create a polished and realistic prototype of the user interface by adhering to design thinking principles, UI heuristics, and UX design principles to ensure optimal user experience and engagement.

Project Tasks:

1. Task 1: Conduct user research to develop a persona and user journey map.
2. Task 2: Assess the tools and frameworks for the prototype development process.
3. Task 3: Develop high-fidelity prototype by incorporating UX design principles.
4. Task 4: Perform usability testing to gather user feedback.
5. Task 5: Analyse observations and feedback to refine and enhance the prototype iteratively.

7.2 Module Session Plan

Session No#	Session Type	Day no#	Duration Hrs
1	E-Learning on IU 1& 2	1	2
2	Flipped Class on IU 1 & 2	1	3
3	Mentoring Support - Assignment on IU 1& 2	2	3
4	Mentoring Support -Additional Practice -1	2	6
5	E-Learning on IU 3 &4	3	2
6	Flipped Class on IU 3&4	3	3
7	Mentoring Support - Assignment on IU 3&4	4	3
8	Mentoring Support -Additional Practice -2	4	6
9	E-Learning on IU 5	5	2
10	Flipped Class on IU 5	5	3
11	Mentoring Support - Assignment on IU 5	6	3
12	Mentoring Support -Additional Practice -3	6	6
13	Mentoring Support – Project Planning -1	7	3
14	Mentoring Support – Projects Implementation 1	8	3
15	Mentoring Support – Projects Implementation 2	8	2
16	Mentoring Support -Additional Practice -4	8	6
17	Mentoring Support – Project Planning -2	9	3
18	Mentoring Support – Projects Implementation 3	10	3
19	Mentoring Support – Projects Implementation 4	10	2
20	Mentoring Support -Additional Practice -5	10	6
21	Summative Assessment (per learner)	11	30 min

8. Module Details – Database Design principles

8.1 Module Brief

The Database Design principles module equips learners with the expertise required to excel in various facets of database management. Through the instructional units, learners acquire a holistic comprehension of data organization, database design concepts, entity-relationship modelling, normalization techniques, data definition, retrieval, maintenance, testing, and documentation. By actively participating in practical exercises and hands-on activities, learners develop proficiency in tasks such as planning database usage, creating conceptual, logical, and physical designs, optimizing queries and stored procedures, and conducting thorough testing and documentation. These skills enable learners to effectively communicate database schemas, entities, relationships, and data dictionaries, facilitating collaboration and ensuring smooth maintenance processes.

During the module project, learners demonstrate their ability to create an optimal database design for a consumer-centric Rich Internet Application. The project serves as a platform for showcasing their expertise in various areas, including requirements analysis, entity relationships and constraints, development of conceptual, logical, and physical designs, planning of database user groups aligned with business processes, writing optimized queries and stored procedures to meet management requirements, and conducting comprehensive testing to ensure accuracy, reliability, and performance. In summary, learners acquire the capability to develop efficient and effective databases for client-centric products, meeting industry demands for design optimization, query performance, and system reliability, thus staying competitive in the field of data modelling and design.

Instructional Units:

1. Introduction to Database Design
2. Entity-Relationship Modelling and Normalization
3. Data Manipulation and Query Optimization
4. Database Maintenance and Testing
5. Database Documentation and Collaboration.

Module Project:

Project Objective: Create a well-structured and highly efficient database system for developing a Rich Internet Application, involving activities such as organizing data logically, formulating conceptual, logical, and physical designs, optimizing queries and stored procedures, and performing thorough testing to ensure outstanding system performance

Project Tasks

1. Task 1: Apply critical thinking skills to analyse requirements and generate a database schema.
2. Task 2: Utilize analytical and problem-solving abilities to develop conceptual, logical, and physical designs for implementing the database.
3. Task 3: Execute data population strategies to simulate business operations.
4. Task 4: Implement advance data manipulation techniques to generate management reports.
5. Task 5: Employ testing methodologies to ensure the accuracy, reliability, and optimal performance of the database.

8.2 Module Session Plan

Session No#	Session Type	Day no#	Duration Hrs
1	E-Learning on IU 1& 2	1	2
2	Flipped Class on IU 1 & 2	1	3
3	Mentoring Support - Assignment on IU 1& 2	2	3
4	E-Learning on IU 3 &4	3	2
5	Flipped Class on IU 3&4	3	3
6	Mentoring Support - Assignment on IU 3&4	4	3
7	E-Learning on IU 5	5	2
8	Flipped Class on IU 5	5	3
9	Mentoring Support - Assignment on IU 5	6	3
10	Mentoring Support – Project Planning -1	7	3
11	Mentoring Support – Projects Implementation 1	8	3
12	Mentoring Support – Projects Implementation 2	8	2
13	Mentoring Support – Project Planning -2	9	3
14	Mentoring Support – Projects Implementation 3	10	3
15	Mentoring Support – Projects Implementation 4	10	2
16	Summative Assessment (per learner)	11	30 min

9. Module Details – Web Development design

9.1 Module Brief

The Web Development design module equips learners with the knowledge and skills needed to excel in the field of full-stack web development. The instructional units help them to gain a comprehensive understanding of Software Development Life Cycle (SDLC), technical design principles, back-end development principles and techniques, design patterns, application development using frameworks, testing, and documentation. By engaging in practical exercises and hands-on activities, learners develop proficiency in back-end development using frameworks, expertise in creating modular and scalable web applications, testing methods, and effective documentation practices.

During the module project, learners demonstrate their ability to produce consumer-web applications that incorporate design patterns and database interaction. The project serves as a platform for showcasing their competence in technical design aligned business process, architecting solutions to address specific business problems, implementing appropriate design patterns with authentication and authorization, conducting unit testing and user acceptance testing to ensure compliance with business requirements and application quality. In summary, learners develop the skills necessary to pursue web developer roles and contribute to the development of scalable and dependable client-focused web applications that meet the demands of the industry.

Instructional Units:

1. Fundamentals of SDLC & Technical Design
2. Back-end development principles and techniques
3. Design patterns
4. Development using the framework
5. Testing & Documentation

Module Project:

Project Objective: Create a robust and scalable web application that caters to consumer needs, integrating server-side scripting and database interaction, with a focus on system design, development, testing, and documentation.

Project Tasks

1. Task 1: Define the system requirements specification to meet the business objectives
2. Task 2: Design the necessary modules to fulfil the specified system requirements.
3. Task 3: Assess the tools and frameworks needed for the development process.
4. Task 4: Implement the software based on the established design.
5. Task 5: Evaluate the implemented solution to ensure its effectiveness and efficiency.

9.2 Module Session Plan

Session No#	Session Type	Day no#	Duration Hrs
1	E-Learning on IU 1& 2	1	2
2	Flipped Class on IU 1 & 2	1	3
3	Mentoring Support - Assignment on IU 1& 2	2	3
4	Mentoring Support -Additional Practice -1	2	6
5	E-Learning on IU 3 &4	3	2
6	Flipped Class on IU 3&4	3	3
7	Mentoring Support - Assignment on IU 3&4	4	3
8	Mentoring Support -Additional Practice -2	4	6
9	E-Learning on IU 5	5	2
10	Flipped Class on IU 5	5	3
11	Mentoring Support - Assignment on IU 5	6	3
12	Mentoring Support -Additional Practice -3	6	6
13	Mentoring Support – Project Planning -1	7	3
14	Mentoring Support – Projects Implementation 1	8	3
15	Mentoring Support – Projects Implementation 2	8	2
16	Mentoring Support -Additional Practice -4	8	6
17	Mentoring Support – Project Planning -2	9	3
18	Mentoring Support – Projects Implementation 3	10	3
19	Mentoring Support – Projects Implementation 4	10	2
20	Mentoring Support -Additional Practice -5	10	6
21	Summative Assessment (per learner)	11	30 min

10. Module Details – Capstone Project - Application Development

10.1 Module Brief

The Capstone Project - Application Development module provides learners with the opportunity to apply their acquired knowledge and skills in a comprehensive project, where they design, develop, and deploy a real-world web application. Starting with requirements gathering and thorough analysis, learners collaborate with stakeholders to define project goals. Leveraging their strong foundation in system architecture and design principles, learners implement front-end UI components using HTML, CSS, and JavaScript frameworks and libraries to create an intuitive user interface. Concurrently, they construct back-end components by developing server-side logic, integrating databases, and creating API endpoints.

Rigorous testing, including unit testing, usability testing, load testing, cross-browser testing, and user acceptance testing, ensures the robustness and reliability of the application. Throughout the module, learners prioritize deployment considerations such as scalability, security, and performance optimization. Collaboration and effective documentation play crucial roles in fostering teamwork and providing valuable references for future use.

Module Project:

Project Objective: Create a consumer-centric web application that is scalable and reliable, encompassing the entire process from planning and design to development, testing, and deployment of a fully functional web application.

Project Tasks

1. Task 1: Submit a project proposal to implement the application
2. Task 2: Design the necessary modules to meet the system requirements specification
3. Task 3: Develop the application based on the designed modules
4. Task 4: Execute appropriate testing methods to ensure the reliability and performance
5. Task 5: Enhance the implemented application based on feedback and improvements.

10.2 Module Session Plan

Session No#	Session Type	Day no#	Duration Hrs
1	Mentoring Support – Project Planning -1	1	3
2	Mentoring Support – Projects Implementation 1	2	3
3	Mentoring Support -Additional Practice -1	3	5
4	Mentoring Support -Additional Practice -1	4	5
5	Mentoring Support – Project Planning -2	5	3
6	Mentoring Support – Projects Implementation 2	6	3
7	Mentoring Support -Additional Practice -1	7	5
8	Mentoring Support -Additional Practice -1	8	5
9	Mentoring Support – Project Planning -3	9	3
10	Mentoring Support – Projects Implementation 3	10	3
11	Mentoring Support -Additional Practice -1	11	5
12	Mentoring Support -Additional Practice -1	12	5
13	Mentoring Support – Project Planning -4	13	3
14	Mentoring Support – Projects Implementation 4	14	3
15	Mentoring Support -Additional Practice -1	15	5
16	Mentoring Support -Additional Practice -1	16	5
17	Mentoring Support – Project Planning -5	17	3
18	Mentoring Support – Projects Implementation 5	18	3
19	Mentoring Support -Additional Practice -1	19	5
20	Mentoring Support -Additional Practice -1	20	5
21	Mentoring Support – Project Planning -6	21	3
22	Mentoring Support – Projects Implementation 6	22	3
23	Mentoring Support -Additional Practice -1	23	5
24	Mentoring Support -Additional Practice -1	24	5
25	Mentoring Support – Projects Implementation 7	25	4
26	Summative Assessment (per learner)	26	30 min

11. Module Details – Enterprise Software Design

11.1 Module Brief

In the module on Enterprise Software Design, learners will gain an in-depth understanding of the fundamental principles and practices associated with designing software for enterprises. This module encompasses key topics including Enterprise Software Design Fundamentals, Business Process Modelling, Data Modelling and Database Design, Software Architecture Design, and UI/UX Design. By mastering these subjects, learners will develop the necessary skills to create enterprise software that are not only well-designed but also user-friendly, effectively meeting the needs of enterprises. Through a combination of theoretical knowledge and practical exercises, learners will establish a strong foundation in enterprise software design, enabling them to contribute to the development of efficient and intuitive software solutions.

The module project serves as a platform for learners to demonstrate their proficiency in understanding and implementing enterprise solutions, giving them a competitive edge in the software industry. It provides an opportunity for learners to showcase their skills in analyzing requirements for scalability, integration, centralized management, standardization, reporting and analytics, security, and improved customer experience. With their knowledge of enterprise application design principles and their ability to optimize operations, drive growth, and improve competitiveness through effective management, integration, standardization, and data analysis, these learners become highly valuable assets in the software industry.

Instructional Units:

1. Enterprise Software Design Fundamentals
2. Business Process Modelling
3. Data Modelling and Database Design
4. Software Architecture Design
5. UI/ UX Design

Module Project:

Project Objective: Design an enterprise application that aims to optimize internal processes, improve interdepartmental communication, and enhance productivity by providing detailed information about the organization's systems and requirements.

Project Tasks

1. Task 1: Analyse business requirements to identify essential functionalities and features.
2. Task 2: Create a comprehensive data model to support the structure and relationships of the business requirements.
3. Task 3: Develop the architecture design to accomplish the desired performance, security, and integration requirements.
4. Task 4: Incorporate user experience (UX) design elements to create a user-friendly and intuitive interface.
5. Task 5: Deliver a comprehensive design proposal to stakeholders, encompassing documentation, visual representations, and rationale for design choices.

11.2 Module Session Plan

Session No#	Session Type	Day no#	Duration Hrs
1	E-Learning on IU 1& 2	1	2
2	Flipped Class on IU 1 & 2	1	3
3	Mentoring Support - Assignment on IU 1& 2	2	3
4	E-Learning on IU 3 &4	3	2
5	Flipped Class on IU 3&4	3	3
6	Mentoring Support - Assignment on IU 3&4	4	3
7	E-Learning on IU 5	5	2
8	Flipped Class on IU 5	5	3
9	Mentoring Support - Assignment on IU 5	6	3
10	Mentoring Support – Project Planning -1	7	3
11	Mentoring Support – Projects Implementation 1	8	3
12	Mentoring Support – Projects Implementation 2	8	2
13	Mentoring Support – Project Planning -2	9	3
14	Mentoring Support – Projects Implementation 3	10	3
15	Mentoring Support – Projects Implementation 4	10	2
16	Summative Assessment (per learner)	11	30 min

12. Module Details – Enterprise Software Development

12.1 Module Brief

In the Enterprise Software Development module, learners will acquire the essential knowledge and skills required to create enterprise-level applications that align with organizational requirements. Throughout this module, learners will gain a comprehensive understanding of key topics, including enterprise application architecture, implementation of business logic and integration techniques, user interface development, and the testing, deployment, and maintenance of enterprise software. Through a combination of theoretical knowledge and practical exercises, learners will develop proficiency in building robust and scalable enterprise applications by leveraging design patterns, frameworks, and libraries.

The module project offers learners a platform to demonstrate their proficiency in enterprise application development, enabling them to make valuable contributions to organizational success and growth. By optimizing operations, streamlining processes, automating tasks, and improving efficiency, learners can enhance the overall effectiveness of organizations. These applications facilitate seamless communication and collaboration, ensuring data consistency, security, and accessibility. Additionally, enterprise application development fosters innovation, differentiation, and a competitive edge by integrating emerging technologies and providing unique functionalities. Ultimately, it empowers organizations to optimize operations, adapt to changing needs, and gain a sustainable advantage in the market.

Instructional Units:

1. Introduction to Enterprise Software Development
2. Designing Enterprise Software Architecture
3. Implementing Business Logic and Integration
4. User Interface Development
5. Testing, Deployment, and Maintenance of Enterprise Software

Module Project:

Project Objective: Develop an enterprise application that drives organizational sustainability through the optimization of operations, streamlined processes, task automation, and improved efficiency.

Project Tasks

1. Task 1: Analyse the organization's business requirements to identify the essential functionalities and features required in the enterprise application.
2. Task 2: Design a robust and efficient application architecture, considering scalability, performance, and security considerations.
3. Task 3: Develop a user-friendly and visually appealing user interface for the enterprise application, prioritizing usability, and accessibility.
4. Task 4: Conduct rigorous testing to ensure the functionality, performance, and reliability of the application prior to deployment.
5. Task 5: Perform ongoing maintenance activities, such as monitoring, troubleshooting, and iterative improvements, to continuously enhance the application's performance and effectiveness.

12.2 Module Session Plan

Session No#	Session Type	Day no#	Duration Hrs
1	E-Learning on IU 1& 2	1	3
2	Flipped Class on IU 1 & 2	1	3
3	Mentoring Support - Assignment on IU 1& 2	2	3
4	Mentoring Support -Additional Practice -1	2	5
5	E-Learning on IU 3	3	2
6	Flipped Class on IU 3	3	3
7	Mentoring Support - Assignment on IU 3	4	3
8	Mentoring Support -Additional Practice -1	4	5
9	E-Learning on IU 4	5	2
10	Flipped Class on IU 4	5	3
11	Mentoring Support - Assignment on IU 4	6	3
12	Mentoring Support -Additional Practice -1	6	5
13	E-Learning on IU 5	7	2
14	Flipped Class on IU 5	7	3
15	Mentoring Support - Assignment on IU 5	8	3
16	Mentoring Support -Additional Practice -1	8	5
17	Mentoring Support – Project Planning -1	9	3
18	Mentoring Support – Projects Implementation 1	10	3
19	Mentoring Support -Additional Practice -1	10	5
20	Mentoring Support – Projects Implementation 2	11	3
21	Mentoring Support -Additional Practice -1	11	5
22	Mentoring Support – Project Planning -2	12	3
23	Mentoring Support – Projects Implementation 3	13	3
24	Mentoring Support -Additional Practice -1	13	5
25	Mentoring Support – Projects Implementation 4	14	3
26	Mentoring Support -Additional Practice -1	14	5
27	Mentoring Support – Project Planning -3	15	3
28	Mentoring Support – Projects Implementation 5	16	3
29	Mentoring Support -Additional Practice -1	16	5
30	Mentoring Support – Projects Implementation 6	17	3
31	Mentoring Support -Additional Practice -1	17	5
32	Summative Assessment (per learner)	18	30 min

13. Module Details – API Development

13.1 Module Brief

The API Development module provides learners with the necessary knowledge and skills to create and implement robust integration solutions that enable smooth data exchange and seamless workflows between different applications and systems. By engaging with the instructional units, learners gain a comprehensive understanding of key integration techniques, including fundamentals of API development, types of API, API integration and web services, data integration and ETL (Extract, Transform, Load), as well as security and governance in application integration. Through a combination of theoretical learning and hands-on exercises, learners gain the ability to design and implement seamless integration solutions that effectively enhance organizational efficiency and productivity.

The module project provides learners with an opportunity to showcase their expertise in establishing seamless data exchange and workflow by connecting various software applications and systems within an organization. It serves as a platform for learners to demonstrate their proficiency in integrating data, processes, and functionalities from multiple applications, eliminating data silos and ensuring consistent and accurate information across systems. By leveraging their skills in application integration, learners contribute to creating a unified and cohesive environment, harmonizing data, and streamlining business processes. Their capabilities enable organizations to access critical data in real-time, facilitating informed decision-making, automating processes, reducing manual efforts, and ultimately enhancing overall productivity.

Instructional Units:

1. API Development Fundamentals
2. Types of APIs
3. API Integration and Web Services
4. Data Integration
5. Security and Governance in API Development

Module Project:

Project Objective: Establish a cohesive environment that enables real-time access to critical data for informed decision-making, process automation, reduced manual efforts, and improved overall productivity.

Project Tasks

1. Task 1: Analyse the organization's existing applications and systems to identify integration requirements and potential challenges.
2. Task 2: Design an integration architecture diagram and documentation, selecting suitable integration patterns, protocols, and technologies.
3. Task 3: Implement the proposed integration solution to facilitate seamless data exchange and workflow between applications and systems.
4. Task 4: Conduct thorough testing to identify and resolve any issues or bugs that may arise during the integration process.
5. Task 5: Apply security and governance practices to ensure data integrity and confidentiality throughout the integration process.

13.2 Module Session Plan

Session No#	Session Type	Day no#	Duration Hrs
1	E-Learning on IU 1& 2	1	2
2	Flipped Class on IU 1 & 2	1	3
3	Mentoring Support - Assignment on IU 1& 2	2	3
4	Mentoring Support -Additional Practice -1	2	6
5	E-Learning on IU 3 &4	3	2
6	Flipped Class on IU 3&4	3	3
7	Mentoring Support - Assignment on IU 3&4	4	3
8	Mentoring Support -Additional Practice -2	4	6
9	E-Learning on IU 5	5	2
10	Flipped Class on IU 5	5	3
11	Mentoring Support - Assignment on IU 5	6	3
12	Mentoring Support -Additional Practice -3	6	6
13	Mentoring Support – Project Planning -1	7	3
14	Mentoring Support – Projects Implementation 1	8	3
15	Mentoring Support – Projects Implementation 2	8	2
16	Mentoring Support -Additional Practice -4	8	6
17	Mentoring Support – Project Planning -2	9	3
18	Mentoring Support – Projects Implementation 3	10	3
19	Mentoring Support – Projects Implementation 4	10	2
20	Mentoring Support -Additional Practice -5	10	6
21	Summative Assessment (per learner)	11	30 min

14. Module Details – Software Testing & Problem Solving

14.1 Module Brief

The Software Testing & Problem Solving module equips learners with the necessary knowledge and skills to excel in the field of software testing and problem management. The instructional units help them to acquire a deep understanding of various software testing principles and methodologies, automated testing, performance testing, problem management principles, and test and incident management reporting. Through a combination of theoretical knowledge and practical exercises, learners develop the skills to effectively plan and implement different testing techniques, strategies, and best practices, ensuring software quality and resolving issues that arise throughout the software development lifecycle.

The module project provides learners with the opportunity to demonstrate their proficiency in software testing and problem-solving, enabling them to contribute to the development and implementation of high-quality software applications. It allows them to showcase their ability to apply various testing principles and methodologies, utilize test automation techniques, conduct performance testing, employ problem management tools and techniques, and generate comprehensive test and incident management reports. Ultimately, learners gain the ability to ensure the reliability, performance, and success of software applications through meticulous testing and effective problem-solving.

Instructional Units:

1. Introduction to Software Testing
2. Automated Testing
3. Performance Testing
4. Problem Management Principles
5. Test and Incident Management Reporting

Module Project:

Project Objective: Ensure software quality through comprehensive testing and effective problem management.

Project Tasks

1. Task 1: Apply software testing principles and methodologies to identify and plan appropriate testing techniques for the software application.
2. Task 2: Implement automated testing strategies to streamline the testing process and improve efficiency.
3. Task 3: Conduct performance testing to evaluate and optimize the application's speed, responsiveness, and scalability.
4. Task 4: Utilize problem management principles and techniques to effectively handle and resolve issues that arise during the development and implementation process.
5. Task 5: Generate test and incident management reports to provide clear documentation and insights into the testing process and problem resolution.

14.2 Module Session Plan

Session No#	Session Type	Day no#	Duration Hrs
1	E-Learning on IU 1& 2	1	2
2	Flipped Class on IU 1 & 2	1	3
3	Mentoring Support - Assignment on IU 1& 2	2	3
4	Mentoring Support -Additional Practice -1	2	6
5	E-Learning on IU 3 &4	3	2
6	Flipped Class on IU 3&4	3	3
7	Mentoring Support - Assignment on IU 3&4	4	3
8	Mentoring Support -Additional Practice -2	4	6
9	E-Learning on IU 5	5	2
10	Flipped Class on IU 5	5	3
11	Mentoring Support - Assignment on IU 5	6	3
12	Mentoring Support -Additional Practice -3	6	6
13	Mentoring Support – Project Planning -1	7	3
14	Mentoring Support – Projects Implementation 1	8	3
15	Mentoring Support – Projects Implementation 2	8	2
16	Mentoring Support -Additional Practice -4	8	6
17	Mentoring Support – Project Planning -2	9	3
18	Mentoring Support – Projects Implementation 3	10	3
19	Mentoring Support – Projects Implementation 4	10	2
20	Mentoring Support -Additional Practice -5	10	6
21	Summative Assessment (per learner)	11	30 min

15. Module Details – Capstone Project - Enterprise Software Implementation

15.1 Module Brief

The Capstone Project-Enterprise Software Implementation module marks the pinnacle of learners' progression in mastering the design and development of enterprise-level applications within the Professional Diploma in Full Stack Web development program. This module involves an extensive project that showcases learners' expertise in conceiving, creating, and deploying a practical enterprise software. The application aims to optimize business processes, unify data, and integrate disparate systems to create a cohesive environment that enhances organizational efficiency and productivity.

The project begins with a thorough process of gathering and analysing requirements, working closely with stakeholders to establish clear project objectives. Leveraging their strong foundation in enterprise architecture design, development, integration techniques, testing methodologies, and problem management principles, learners proceed with the development of front-end, middleware, and back-end components.

Throughout the project, learners conduct rigorous testing to ensure the quality of the application. They address any issues that arise and prioritize considerations such as scalability, security, and performance optimization. Only after thorough testing and issue resolution, the application is promoted to the production environment.

This module provides learners with the opportunity to apply their acquired knowledge and skills in a practical setting, showcasing their ability to deliver a fully functional enterprise application that meets the identified requirements. By successfully completing this capstone project, learners demonstrate their readiness to enter the industry as competent professionals capable of designing, developing, and implementing enterprise software solutions.

Module Project:

Project Objective: Develop an enterprise-level application that integrates departments and regions, allowing employees to access real-time data, collaborate effectively, and automate tasks, with a focus on security and role-based access control

Project Tasks

1. Task 1: Analyse the organization's existing infrastructure, workflows, and requirements to define the application features and areas for improvement.
2. Task 2: Design a comprehensive data model and to promote efficient data flow and interoperability.
3. Task 3: Develop the application components to support diverse business operations, ensuring functionality, scalability, and usability.
4. Task 4: Resolve potential issues and bug by conducting various tests to validate the functionality, performance, and reliability of the enterprise application.
5. Task 5: Collaborate effectively with stakeholders, team members, and end-users throughout the project, gathering feedback and incorporating necessary changes to meet their needs and expectations.

15.2 Module Session Plan

Session No#	Session Type	Day no#	Duration Hrs
1	Mentoring Support – Project Planning -1	1	3
2	Mentoring Support – Projects Implementation 1	2	4
3	Mentoring Support -Additional Practice -1	3	3
4	Mentoring Support – Project Planning -2	4	3
5	Mentoring Support – Projects Implementation 2	5	4
6	Mentoring Support -Additional Practice -2	6	3
7	Mentoring Support – Project Planning -3	7	3
8	Mentoring Support – Projects Implementation 3	8	4
9	Mentoring Support -Additional Practice -3	9	4
10	Mentoring Support – Project Planning -4	10	3
11	Mentoring Support – Projects Implementation 4	11	4
12	Mentoring Support -Additional Practice -4	12	4
13	Mentoring Support – Project Planning -5	13	3
14	Mentoring Support – Projects Implementation 5	14	4
15	Mentoring Support -Additional Practice -5	15	4
16	Mentoring Support – Project Planning -6	16	3
17	Mentoring Support – Projects Implementation 6	17	4
18	Mentoring Support -Additional Practice -6	18	4
19	Mentoring Support – Project Planning -7	19	3
20	Mentoring Support – Projects Implementation 7	20	4
21	Mentoring Support -Additional Practice -7	21	4
22	Mentoring Support – Project Planning -8	22	3
23	Mentoring Support – Projects Implementation 8	23	4
24	Mentoring Support -Additional Practice -8	24	4
25	Mentoring Support – Projects Implementation 9	25	4
26	Summative Assessment (per learner)	26	30 min

16. Credentials

Name of the Credentials	Details
Academic Qualification	Professional Diploma in Full Stack Web development awarded by Lithan Academy
EduCLaaS Job Role Certification	Full Stack Web developer
Industry Skills Certification	NA
Statement of Attainment	User Interface Design (Bundled) (SF) • ICT-DES-3008-1.1 User interface design Programming Fundamentals (Bundled)(SF) • ICT-DES-3005-1.1 Software Design User experience design (Bundled) (SF) • ICT-DES-3007-1.1 User Experience Design Database Design principles (Bundled) (SF) • ICT-DES-3001-1.1 Data Design Web Development design (Bundled) (SF) • ICT-DIT-3002-1.1 Applications Development Capstone Project - Application Development (Bundled) (SF) • ICT-DIT-3017-1.1 Test Planning • ICT-OUS-4011-1.1 Problem Management Enterprise Software Design (Bundled) (SF) • ICT-DIT-4002-1.1 Applications Development Enterprise Software Development (Bundled) (SF) • ICT-DES-4006-1.1 Solution Architecture • ICT-DES-4005-1.1 Software Design API Development (Bundled) (SF) • ICT-DIT-4003-1.1 Application Integration • ICT-OUS-3001-1.1 Applications Support and Enhancement Software Testing & Problem Solving (Bundled) (SF) • ICT-OUS-4011-1.1 Problem Management Capstone Project-Enterprise Software Implementation (Bundled) (SF) • ICT-PMT-4001-1.1 Business Needs Analysis • ICT-PMT-4026-1.1 Project Management