

Programming Foundations

Session No#	Session mode	Session Details	Week-Day	Duration Hrs
1	Adaptive Knowledge KN-Async	<p>IU 1: Programming Primer</p> <p>1. Instructional contents (text)</p> <ul style="list-style-type: none"> • Computational Thinking • Algorithm and Flowchart • Programming Paradigms <p>2. Instructional contents converted to PPT Video/Podcast</p> <ul style="list-style-type: none"> • Computational Thinking • Algorithm and Flowchart • Problem Solving using CT • The IPO Model • Programming Paradigms <p>3. Instructional contents curation from third party (eLearning videos/articles)</p> <p>Videos</p> <ul style="list-style-type: none"> • Programming Foundations: Algorithms • Algorithms power the world <p>Supplementary Learning Materials</p> <ul style="list-style-type: none"> • Foundations of Algorithmic Thinking (LinkedIn Learning Course) <ul style="list-style-type: none"> • Learners are required to complete all e-content to develop a strong understanding of the concepts. • If clarification is required, learners should seek assistance from the AI Mentor. • Any unresolved questions related to concepts, case studies, or skills should be posted in the Teams channel for peer or mentor support. • Learners must complete formative assessments (e.g., MCQs, short-answer questions) and achieve minimum 70% score before progressing. • Auto-graded results and feedback will be provided. Learners are required to review the feedback and reattempt the assessments until minimum 70% is achieved. 	Week 1 - Before next Sync session	3
		<p>IU 1: Programming Primer</p> <p>Concept and Demo</p> <ul style="list-style-type: none"> • Problem Solving and Flowchart <p>Case Study</p> <ol style="list-style-type: none"> 1. Perfect Noodle Challenge - Problem Solving using Computational Thinking 		

2	Adaptive Knowledge KN-Sync	<p>2. Smart Music Discovery Challenge</p> <p>Assignment 1 Traffic Light System</p> <ul style="list-style-type: none"> This session will be delivered either as a live synchronous session conducted by the instructor or through a recorded instructor-led flipped class, which learners are required to attend. During this session, the instructor will explain the case study to reinforce learners' understanding of the concepts. An overview of the assignment will be provided, outlining the requirements that learners are expected to complete. This is a mandatory session, and attendance is required to meet the 75% attendance criteria. 	1-1	3
3	Adaptive Skills Practice SK-Async	<ul style="list-style-type: none"> Upon completing the adaptive knowledge (synchronous and asynchronous) sessions, learners will be able to work on the assignments. <ul style="list-style-type: none"> Assignment 01: Traffic Light System If clarification is required, learners should seek assistance from the AI Mentor. If further support is needed, they may post queries in the Teams channel for peer or mentor support. After submission, learners are required to review the auto-grading results and feedback provided by the AI Mentor and iteratively refine their work until competency is achieved. 	Week 1- Before next Sync Session	3
4	Adaptive Mentoring Support MS-Sync (M)	<ul style="list-style-type: none"> This is a live synchronous session conducted by the mentor to support learner queries across all modules of the qualification. <p>The mentor will review During this session:</p> <ul style="list-style-type: none"> questions posted by learners and the corresponding responses from peers related to the assignments. The mentor will address queries from attending learners across all subjects within the qualification. The objective of this session is to ensure that learners complete all pending assignments within the stipulated deadlines and score minimum 70% in each assignment Attendance at this session is mandatory to meet the minimum 75% attendance requirement. 	1-2	3
		<ul style="list-style-type: none"> This is a live synchronous session conducted by the mentor to support learner queries across all modules of the qualification. <p>During this session:</p>		

5	Adaptive Mentoring Support MS-Sync (M)	<ul style="list-style-type: none"> The mentor will review questions posted by learners and the corresponding responses from peers related to the assignments. The mentor will address queries from attending learners across all subjects within the qualification. The objective of this session is to ensure that learners complete all pending assignments within the stipulated deadlines and score minimum 70% in each assignment Attendance at this session is mandatory to meet the minimum 75% attendance requirement. 	1-3	3
6	Adaptive Knowledge KN-Async	<p>IU2: Programming Basics - Part 1</p> <p>1. Instructional contents (text)</p> <ul style="list-style-type: none"> Introduction to Python and Installation DataTypes, Variables, Printing, Operators and Comments Program Design Essentials Python - Assign Multiple Values to Variables Global Variables Variable Names <p>2. Instructional contents converted to PPT video/Podcast</p> <ul style="list-style-type: none"> Data types, variables, operators and comments <p>3. Instructional contents curation from third party (eLearning videos/articles)</p> <p>Videos</p> <ul style="list-style-type: none"> Python Essential Training <p>Supplementary Learning Materials</p> <p>Introduction to Python learn how to program today with Python</p> <ul style="list-style-type: none"> Learners are required to complete all e-content to develop a strong understanding of the concepts. If clarification is required, learners should seek assistance from the AI Mentor. Any unresolved questions related to concepts, case studies, or skills should be posted in the Teams channel for peer or mentor support. Learners must complete formative assessments (e.g., MCQs, short-answer questions) and achieve minimum 70% score before progressing. Auto-graded results and feedback will be provided. Learners are required to review the feedback and reattempt the assessments until minimum 70% is achieved. 	Week 1 - Before next Sync session	3
		IU2: Programming Basics - Part 1		

7	Adaptive Knowledge KN-Sync	<p>Concept and Demo</p> <ul style="list-style-type: none"> Programming Basics – Data types, variables, operators <p>Case Study</p> <ol style="list-style-type: none"> The Campus Café Inventory & Sales Tracker - Apply CT, Behavioral Design and Program Daily Fitness Tracker - Apply CT, Behavioral Design and Program <p>Assignment 2 Smart Gym Daily Member Equipment Tracker</p> <p>This session will be delivered either as a synchronous session conducted by the instructor or through a recorded instructor-led flipped class, which learners are required to attend.</p> <p>During this session, the instructor will explain the case study to reinforce the learners’ understanding of the concepts.</p> <p>An overview of Assignment will also be provided, outlining the requirements that learners are expected to complete.</p> <p>This is a mandatory session, and attendance is required to meet the 75% attendance criteria.</p>	1-4	3
8	Adaptive Skills Practice SK-Async	<ul style="list-style-type: none"> Upon completing the adaptive knowledge (synchronous and asynchronous) sessions, learners will be able to work on the assignments. Assignment 02: Smart Gym Daily Member Equipment Tracker If clarification is required, learners should seek assistance from the AI Mentor. If further support is needed, they may post queries in the Teams channel for peer or mentor support. After submission, learners are required to review the auto-grading results and feedback provided by the AI Mentor and iteratively refine their work until competency is achieved. 	Week 1- Before next Sync Session	3
9	Adaptive Mentoring Support MS-Sync (M)	<ul style="list-style-type: none"> This is a live synchronous session conducted by the mentor to support learner queries across all modules of the qualification. <p>During this session:</p> <ul style="list-style-type: none"> The mentor will review questions posted by learners and the corresponding responses from peers related to the assignments. The mentor will address queries from attending learners across all subjects within the qualification. 	1-5	3

		<ul style="list-style-type: none"> The objective of this session is to ensure that learners complete all pending assignments within the stipulated deadlines and score minimum 70% in each assignment Attendance at this session is mandatory to meet the minimum 75% attendance requirement. 		
10	Adaptive Mentoring Support MS-Sync (M)	<ul style="list-style-type: none"> This is a live synchronous session conducted by the mentor to support learner queries across all modules of the qualification. <p>During this session:</p> <ul style="list-style-type: none"> The mentor will review questions posted by learners and the corresponding responses from peers related to the assignments. The mentor will address queries from attending learners across all subjects within the qualification. The objective of this session is to ensure that learners complete all pending assignments within the stipulated deadlines and score minimum 70% in each assignment Attendance at this session is mandatory to meet the minimum 75% attendance requirement. 	2-6	3
11	Adaptive Knowledge KN-Async	<p>IU3: Programming Basics – Part 2</p> <p>1. Instructional contents (text)</p> <ul style="list-style-type: none"> Conditional Statements and Loops Functions in Python Input Output and Error Handling Control Flows Loops Iteration Conditions Logic FizzBuzz Challenge <p>2. Instructional contents converted to PPT video/Podcast</p> <ul style="list-style-type: none"> Control Flows and Loops Iterations Conditions Logic Even and Odd Input Output and Error Handling Functions in Python <p>3. Instructional contents curation from third party (eLearning videos/articles)</p> <p>Videos</p> <ul style="list-style-type: none"> Python quick start (LinkedIn Learning Course) <p>Supplementary Learning Materials</p> <ul style="list-style-type: none"> Getting started with python for finance (LinkedIn Learning Course) <ul style="list-style-type: none"> Learners are required to complete all e-content to develop a strong understanding of the concepts. 	Week 2 - Before next Sync session	3

		<ul style="list-style-type: none"> • If clarification is required, learners should seek assistance from the AI Mentor. • Any unresolved questions related to concepts, case studies, or skills should be posted in the Teams channel for peer or mentor support. • Learners must complete formative assessments (e.g., MCQs, short-answer questions) and achieve minimum 70% score before progressing. • Auto-graded results and feedback will be provided. Learners are required to review the feedback and reattempt the assessments until minimum 70% is achieved. 		
12	Adaptive Knowledge KN-Sync	<p>IU3: Programming Basics – Part 2</p> <p>Concept and Demo</p> <ul style="list-style-type: none"> • Programming Basics – Sequential flow, Iterative flow, functions <p>Case Study</p> <ol style="list-style-type: none"> 1. Quick-Stop Digital Snack Shop - Behavioral Design, Program Code using Control Flows and Loops 2. Bookstore Inventory Revenue Tracker <p>Assignment 3</p> <ul style="list-style-type: none"> • Green Campus Shuttle Ticket Kiosk <p>This session will be delivered either as a synchronous session conducted by the instructor or through a recorded instructor-led flipped class, which learners are required to attend.</p> <p>During this session, the instructor will explain the case study to reinforce the learners’ understanding of the concepts.</p> <p>An overview of Assignment will also be provided, outlining the requirements that learners are expected to complete.</p> <p>This is a mandatory session, and attendance is required to meet the 75% attendance criteria.</p>	2-7	3
13	Adaptive Skills Practice SK-Async	<ul style="list-style-type: none"> • Upon completing the adaptive knowledge (synchronous and asynchronous) sessions, learners will be able to work on the assignments. • Assignment 03: Green Campus Shuttle Ticket Kiosk • If clarification is required, learners should seek assistance from the AI Mentor. If further support is needed, they may post queries in the Teams channel for peer or mentor support. 	Week 1- Before next Sync Session	3

		<ul style="list-style-type: none"> After submission, learners are required to review the auto-grading results and feedback provided by the AI Mentor and iteratively refine their work until competency is achieved. 		
14	Adaptive Mentoring Support MS -Sync (M)	<ul style="list-style-type: none"> This is a live synchronous session conducted by the mentor to support learner queries across all modules of the qualification. <p>During this session:</p> <ul style="list-style-type: none"> The mentor will review questions posted by learners and the corresponding responses from peers related to the assignments. The mentor will address queries from attending learners across all subjects within the qualification. The objective of this session is to ensure that learners complete all pending assignments within the stipulated deadlines and score minimum 70% in each assignment Attendance at this session is mandatory to meet the minimum 75% attendance requirement. 	2-8	3
15	Adaptive Mentoring Support MS -Sync (M)	<ul style="list-style-type: none"> This is a live synchronous session conducted by the mentor to support learner queries across all modules of the qualification. <p>During this session:</p> <ul style="list-style-type: none"> The mentor will review questions posted by learners and the corresponding responses from peers related to the assignments. The mentor will address queries from attending learners across all subjects within the qualification. The objective of this session is to ensure that learners complete all pending assignments within the stipulated deadlines and score minimum 70% in each assignment Attendance at this session is mandatory to meet the minimum 75% attendance requirement. 	2-9	3
16	Adaptive Knowledge KN-Async	<p>IU4: Object Oriented Programming</p> <p>1. Instructional contents (text)</p> <ul style="list-style-type: none"> Procedural_Vs_OOP Key Features of OOP Python OOP Essentials: Encapsulation, Inheritance, Polymorphism and Abstraction Classes and Objects <p>2. Instructional contents converted to PPT video/Podcast</p> <ul style="list-style-type: none"> Procedural vs OOP Key Features of OOP <p>3. Instructional contents curation from third party (eLearning videos/articles)</p> <p>Videos</p> <ul style="list-style-type: none"> Python quick start (LinkedIn Learning Course) 	Week 2 - Before next Sync session	3

		<p>Supplementary Learning Materials</p> <ul style="list-style-type: none"> Getting started with python for finance (LinkedIn Learning Course) <p>IU5: Testing & Documentation</p> <p>1. Instructional contents (text)</p> <ul style="list-style-type: none"> Python Testing & Documentation Unit Testing <p>2. Instructional contents converted to PPT video/Podcast</p> <ul style="list-style-type: none"> Python Testing & Documentation Unit Testing <p>3. Instructional contents curation from third party (eLearning videos/articles)</p> <p>Supplementary Learning Materials</p> <ul style="list-style-type: none"> Unit Testing in Python (LinkedIn Learning Course) <ul style="list-style-type: none"> Learners are required to complete all e-content to develop a strong understanding of the concepts. If clarification is required, learners should seek assistance from the AI Mentor. Any unresolved questions related to concepts, case studies, or skills should be posted in the Teams channel for peer or mentor support. Learners must complete formative assessments (e.g., MCQs, short-answer questions) and achieve minimum 70% score before progressing. Auto-graded results and feedback will be provided. Learners are required to review the feedback and reattempt the assessments until minimum 70% is achieved. 		
17	Adaptive Knowledge KN-Sync	<p>IU4: Object Oriented Programming IU5: Testing & Documentation</p> <p>Concept and Demo</p> <ul style="list-style-type: none"> Principles of OOP Testing and Documentation <p>Case Study</p> <ol style="list-style-type: none"> AcademicHub Student Management System - Implement program using OOP features Pet Clinic System Calculator_App - Python testing The Broken ATM <p>Assignments</p>	2-10	3

		<ul style="list-style-type: none"> • Assignment 04 - BookHub Rental Tracker - Implement program using OOP features • Assignment 05 - Budget Buddy Student Expense Tracker <p>This session will be delivered either as a synchronous session conducted by the instructor or through a recorded instructor-led flipped class, which learners are required to attend.</p> <p>During this session, the instructor will explain the case study to reinforce the learners' understanding of the concepts.</p> <p>An overview of Assignment will also be provided, outlining the requirements that learners are expected to complete.</p> <p>This is a mandatory session, and attendance is required to meet the 75% attendance criteria.</p>		
18	Adaptive Skills Practice SK-Async	<ul style="list-style-type: none"> • Upon completing the adaptive knowledge (synchronous and asynchronous) sessions, learners will be able to work on the assignments. • Assignment 04 - Book Hub Rental Tracker - Implement program using OOP features • Assignment 05 - Budget Buddy Student Expense Tracker • If clarification is required, learners should seek assistance from the AI Mentor. If further support is needed, they may post queries in the Teams channel for peer or mentor support. • After submission, learners are required to review the auto-grading results and feedback provided by the AI Mentor and iteratively refine their work until competency is achieved. 	Week 3- Before next Sync Session	3
19	Adaptive Mentoring Support MS -Sync (M)	<ul style="list-style-type: none"> • This is a live synchronous session conducted by the mentor to support learner queries across all modules of the qualification. <p>During this session:</p> <ul style="list-style-type: none"> • The mentor will review questions posted by learners and the corresponding responses from peers related to the assignments. • The mentor will address queries from attending learners across all subjects within the qualification. • The objective of this session is to ensure that learners complete all pending assignments within the stipulated deadlines and score minimum 70% in each assignment • Attendance at this session is mandatory to meet the minimum 75% attendance requirement. 	3-11	3

20	Adaptive Mentoring Support MS -Sync (M)	<ul style="list-style-type: none"> This is a live synchronous session conducted by the mentor to support learners in completing the project and submitting the project report. The objective of this session is to ensure that learners complete and submit the project report prior to the summative assessment. <p>Attendance at this session is mandatory to meet the minimum 75% attendance requirement.</p>	3-12	3
21	SA-Sync	<p>Learners who have submitted the project report will attend this session.</p> <p>Summative Assessment (Individual learner)</p> <ul style="list-style-type: none"> Presentation Oral Questioning 	3-13	30 min

Copyright Disclaimer

All rights reserved. No part of this document may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author or publisher, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law. For permission requests, write to the publisher, addressed "Attention: Permissions Coordinator," at the address below.