Instructor Manual

Python Refresher for AI

Table of Contents

Purpose of the Document 3

Course Learning Objectives 3

Preparation 5

Course Materials 5

- Lesson Plan 5
- Instructor Slides 6
- Demo Document 6
- Lab Guide ..... **Error! Bookmark not defined.**
- Guided Practice 6
- Course-end project 6
- Capstone project ..... **Error! Bookmark not defined.**

STAR Framework 6

“Gradual Release of Responsibility” Model 8

Facilitation Guide 9

Dos and Don’ts: 10

- Dos: 10
- Don’ts: 11

Purpose of the Document

This document serves as a go-to guide for instructors, offering essential information and resource links to help them prepare thoroughly for live classes. It covers everything instructors need to know.

Course Learning Objectives

Compare and classify different types of programming languages, program flow, and key programming principles to build a strong foundation for programming

Demonstrate how to install and configure the Python programming environment in an IDE to write and execute code effectively

Explain Python’s benefits and its role in AI and data science to recognize its impact on modern technology

Demonstrate the correct use of Python identifiers, indentation, and comments to write clean, structured, and readable code

Construct and manipulate different Python data types to effectively store and manage data and apply various operators to perform computations and make logical decisions in Python programs

Make use of lists, tuples, dictionaries, and sets to store, modify, and access data efficiently

Apply control flow statements to execute decisions and manage program logic dynamically

Utilize loops to automate repetitive tasks and iterate through data structures effectively

Define and use functions to modularize code, improve reusability, and enhance readability

Select the right data structure for different programming scenarios to optimize data handling

Use functions to define reusable code, manage arguments, and control program scope effectively

Apply generators and lambda functions to process data efficiently and simplify expressions

Implement object-oriented programming to structure code using classes, objects, methods, and inheritance

Perform file-handling operations to create, read, write, and parse different file formats

Handle errors using exception-handling techniques to improve code stability and debugging

Analyze the role and impact of AI in software development to understand its benefits, challenges, and applications

Configure AI-powered coding tools like GitHub Copilot to enhance coding efficiency and streamline development workflows

Construct effective AI prompts to generate high-quality, context-aware code aligned with project requirements

Evaluate AI-generated code to identify errors, optimize performance, and ensure security and maintainability

Analyze ethical and legal considerations in AI-assisted coding to make responsible decisions regarding ownership, security, and compliance

Preparation

1. Carefully review the instructor manual to become familiar with the course components.
2. Familiarize yourself with the course materials, including the lesson plan, instructor slides, demo documents, guided practices, and any practice projects, to ensure thorough preparation for the live class.

Course Materials

Explore the following resources for effective preparation before the live class:

- Lesson Plan
- Instructor Slides
- Demo Documents
- Guided Practice
- Course-end project

Lesson Plan

This document provides a comprehensive overview of the entire course, encompassing the course name, lessons, topics, subtopics, components, and learning objectives or competencies for each lesson.

Instructor Slides

This PowerPoint presentation is intended for use during live virtual classes. It comprises lesson learning objectives, lecture topics, demos, quick checks (multiple-choice questions used as polls for immediate feedback on learners' understanding after each topic), guided practice, and practice projects for each lesson. Each presentation is designed for a 3-hour session.

Demo Document

This detailed document is a comprehensive guide for the instructor to conduct the live demonstrations. It is also a valuable resource for learners to practice offline.

Guided Practice

This flexible exercise is suitable for both individual and small-group activities during live classes, with a recommended duration of 20 to 30 minutes. It is ungraded, and answer keys are provided for reference. The components include an overview, instructions, tasks, discussion questions, and an answer key.

Course-end project

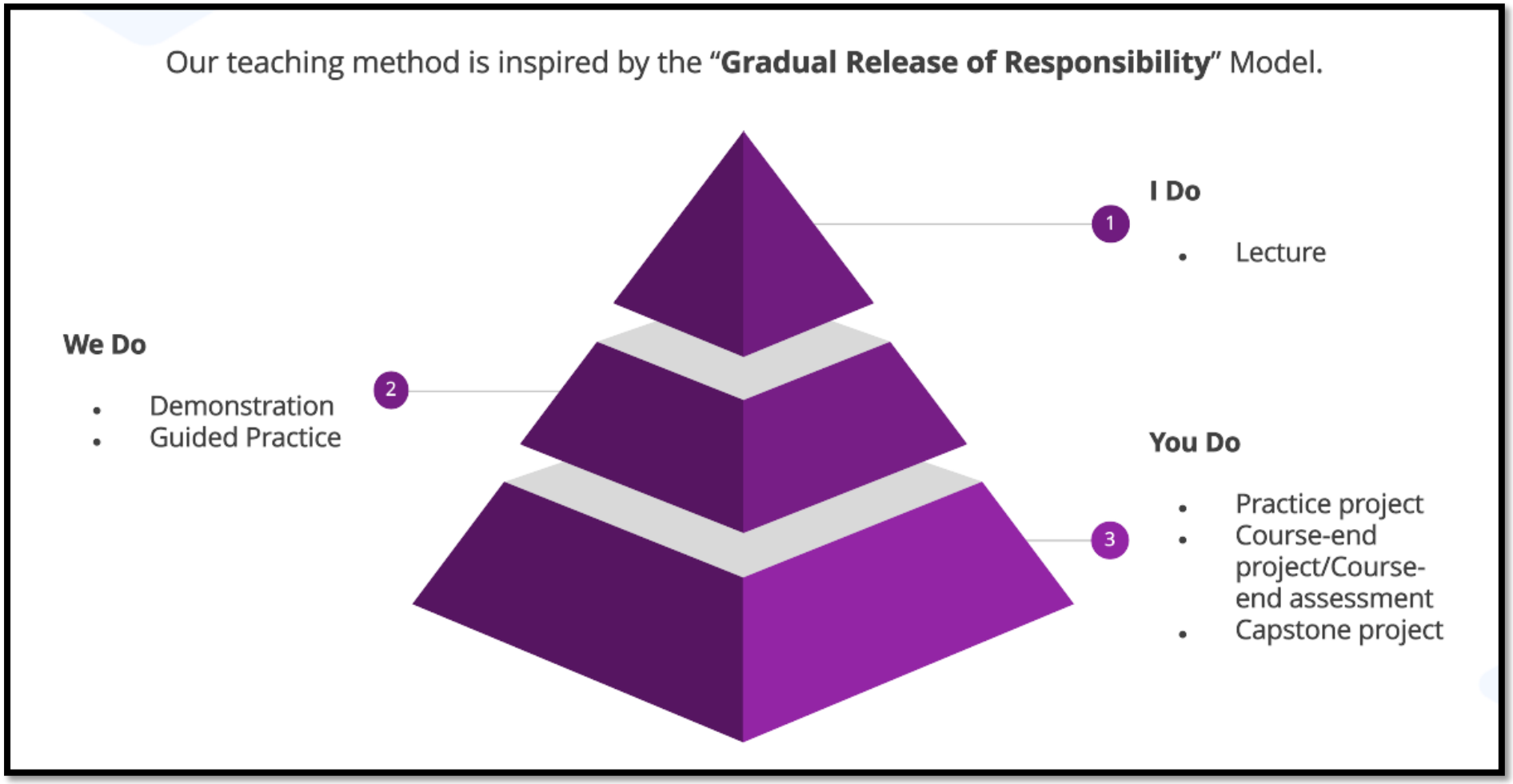
This is a graded assignment at the end of a course. This project is designed based on the STAR Framework to help the learners perform better in interviews. Hence, ***You may find this under "Career Simulation" or under "Assessment" on the LMS.***

STAR Framework

We have leveraged the STAR Framework in designing our **Practice Project, Course-end projects, and Capstone project**. This strategic approach equips our learners with the necessary skills to confidently address situational interview questions.

Learn more about this framework.

“Gradual Release of Responsibility” Model



Facilitation Guide

For each 3-hour session, a specific flow is outlined. Please review the following class structure, detailing associated responsibilities for you as the instructor. The structure includes the flow of lesson components or slide titles, the mode (indicating whether the component is conducted in or out of class), the activity type, and 'Delivery Flexibility' (highlighting whether the component is mandatory or flexible for the instructor to conduct). Additionally, the 'Role of the Instructor' section clarifies your responsibilities for each component, and an estimated duration is provided for each lesson component.

Component/Slide Title	Mode	Activity Type	Delivery Flexibility	Role of the Instructor	Estimated Duration
Course Name			Mandatory	Display this slide as participants join the Zoom call.	Not applicable
Lesson Name			Mandatory	Announce the lesson name.	Not applicable
Quick Recap (lesson two onwards)	Synchronous (In-class)	Instructor-led	Flexible	Quickly recap the previous lesson before starting the lesson. Ask the learners if they have any questions from the previous lesson.	5 minutes
Engage and Think	Synchronous (In-class)	Instructor-led whole group discussion	Mandatory	Facilitate a whole group discussion to kick off today's lesson.	10 minutes
Learning Objectives	Synchronous (In-class)	Instructor-led	Mandatory	Clearly state the learning objectives at the start.	2 minutes
Lecture Topics and Demo	Synchronous (In-class)	Instructor-led	Mandatory	**Lecture**: Use real-world examples to make the theory more relatable. Always **explain the "why" behind each concept** to enhance understanding. Whenever possible, **link the theory to practical** applications so learners can see its relevance in real-life situations. **Demonstration**: It's important to note that having **learners perform demos along with the instructor is not recommended.** Learners might find it hard to follow along in real time, which could lead to frustration and demotivation. Instead, encourage them to watch the instructor closely during the demo. They can later download the demo document and perform the steps on their own time. If they get stuck, they can also refer to the recorded sessions for help.	90 minutes*
Quick Check	Synchronous (In-class)	Poll Question	Flexible	Conduct poll questions and, if necessary, reteach key points based on the results. **If you are short on time, skip a maximum of 1 or 2.**	30 minutes* (5 minutes per quick check)
Guided Practice	Synchronous (In-class)	Small-Group Activity/Individual Activity	Mandatory	As you transition into the guided practice, explain to the students how a guided practice works. The answers are provided, but the point is to try it on their own FIRST and then check the response. Encourage them to make it worth their time.	30 minutes*

				Facilitate the guided practice exercise. Monitor breakout rooms. (in case of small-group activity)	
Key Takeaways	Synchronous (In-class)	Instructor-led	Mandatory	Summarize the lesson's key takeaways.	5 minutes
Practice Project	Asynchronous (Out of the class)	Individual Assignment	Mandatory	You may or may not come across this slide. If present, inform the learners about the assignment, advising them to complete it after class. You can start the project in the live class if time permits.	2 mins
Additional Resources	Asynchronous (Out of the class)	Instructor-led	Flexible	You may or may not come across this slide. If present, share the additional resources in the chat for further study. Mention that these are not mandatory for the learners to complete. **If time is limited, you can skip this.**	2 mins
What's Next? (Optional)	Synchronous (In-class)	Instructor-led	Flexible	You may or may not come across this slide. If present, inform learners about the topics scheduled for the next class. **In case of time constraints, feel free to skip this slide.**	1 min
Q&A	Synchronous (In-class)	Instructor-led whole group discussion	Flexible	Address learners' questions during the Q & A session, time permitting. **If time is limited, you can skip this**.	5 to 10 minutes

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Note: The asterisk (*) indicates flexible durations based on the varying needs of the lesson. Each component's estimated duration is tailored to fit within a 170 to 180-minute class structure.

Dos and Don’ts:

Dos:

- Start every session on time
- Encourage learners to ask questions for a better understanding of the concepts
- Discuss real-world industry applications of the concepts covered in each class.

- Prioritize thorough coverage of all planned concepts.
- Encourage learners to submit practice projects (if applicable) and go through the other materials before attending the next sessions
- Any information related to session extensions should be communicated to the Learner Success Manager before announcing it in the session. Instructors should refrain from discussing session extensions or cancellations with learners unless confirmed by the organization.
- Prior to sharing any reference materials, ensure approval from the respective team/person. Share approved materials through a dedicated official drive or a designated community thread for the specific batch.
- Encourage the learners to reach out to the support team for any support apart from the community threads

Don’ts:

- Making negative comments about the content.
- Rushing and closing the session before the scheduled time.
- Endorsing third-party vendors, external resources, or self-created material.
- Skipping slides or neglecting any lesson component
- Deviating from the suggested flow and modifying it based on personal preferences
- Postponing the coverage of concepts to future sessions
- Extending class durations
- Sharing personal contact details with learners (Email ID/LinkedIn ID/Phone Number)
- Incorporating external content in live class sessions without pre-approval from the Organization.
