

MIS 103: Introduction to Computer Applications
School of Mathematics and Computer Science (SMCS), IBA Karachi
Spring 2026

Program	BSAF
Department Offering the Course	School of Mathematics and Computer Science (SMCS)
Class UMS Number	100684 / 100685
Faculty	Abeera Tariq

Class details				
Class Days, Timing and Room	<u>Session Days</u>	<u>Time</u>	<u>Classroom</u>	<u>Section</u>
	Mon/Wed	10.00 AM - 11.15 AM, 1.00 PM – 2.15 PM	MCL-3 MTL-4	01 02
Credit Hours	3 Credit Hours			
Email	abeeratariq@iba.edu.pk			
Counselling Hours	Mon to Thu 11:30 AM to 12:30 AM or by appointment			

Course Description

Introduction to Computer Applications (ICA) equips students with essential skills in structured problem-solving, computational thinking, and data analysis within a business context. The course is designed for students with no prior computer science background, enabling them to effectively leverage technology and information resources for data analysis.

Program Learning Goals

Technology & Information Literacy (PLC5)

Statement: Students will be able to leverage technology and information resources to analyze data and communicate effectively in the business context.

- Utilize appropriate tools for analyzing business problem (PLO 501) (Introduce)
- Utilize technology effectively for communication in a business context (PLO 502) (Enhance)

Course Learning Outcomes (CLOs)

1. CLO-1: Structured problem-solving (concepts) using frameworks and tools.
2. CLO-2: Learn essential programming fundamental from problem solving and data analysis perspective.
3. CLO-3: Perform data analysis in context of a business problem.

Mapping Assessment to CLO

Class Participation: CLO1, CLO2, CLO3
 Quizzes: CLO1, CLO2, CLO3
 Labs Assignments: CLO2, CLO3
 Home Assignments: CLO2, CLO3
 Term Exams: CLO1, CLO2, CLO3
 Project: CLO2, CLO3

Teaching and Learning Methodology

1. This course needs pre-class reading (if provided), active class participation and regular post lecture follow-up.

2. Lecture presentations and related resources will be uploaded on Learning Management System (LMS).
3. In class, lab assignments (graded) will be given to enforce hands-on experience with tools and techniques.
4. Quizzes will be un-announced, covering theoretical as well as practical aspects.

Course Learning Outcomes mapped to Program Learning Objectives

Course Learning Outcomes mapped to Program Learning Objectives		
Program Learning Goals		
Course Learning Outcomes	PLO 501	PLO 502
CLO 1	×	
CLO 2	×	
CLO 3	×	×
Week / Reference Material	Mapping to Course Learning Outcomes	Session Topic
Week 1 1. An overview of computational thinking.	CLO1	Computational Thinking <ul style="list-style-type: none"> • Structured Problem Solving • Abstraction • Problem Decomposition • Algorithm Design • Generalization • Visual Thinking (Mind Maps, Flow Charts)
Week 2 Chapter 1 & Chapter 2 (Book1) ¹ Lab Assignment#1	CLO2	Introduction to Python <ul style="list-style-type: none"> • Introduction • Setup & Installation • “Hello World” from Python Shell, Command Line and IDLE • Input, Output, and Processing • Variables and Data Types • Comments in Python • How Python works (Interpreter, Python VM)
Week 3 &4 (3 Sessions) Chapter 3 & Chapter 4 (Book1) Lab Assignment 2 &3	CLO2	Control Structures <ul style="list-style-type: none"> • Introduction • Python Operators (Arithmetic, Relational, logical) • Conditional Statements (if, if-else, elif, match case. • Loops (for, while, while True)
Week 4,5,6 (4 Sessions) Chapter 7 & Chapter 9 (Book1) Lab Assignment 4,5,6	CLO2	Container Data Types <ul style="list-style-type: none"> • List & Tuples • Sets • Dictionaries
Week 6 &7 (three Sessions) Chapter 5 (Book1) Lab Assignment 7&8	CLO2	Functions <ul style="list-style-type: none"> • Introduction • Defining and calling functions • Variable Scope • Arguments and Parameters • Value Returning Function • Lambda Functions • Built-in Functions

¹ Starting out with Python

Midterm Exam		
Week 8 Chapter 6 (Book1) Lab Assignment 9	CLO2	Files and Exception Handling <ul style="list-style-type: none"> • Files – why we need files? • Types of files • Working with text files (Read, Write and Modify) • Programming Errors and Exceptions • try and except Mechanism. • else and finally
Week 9&10 1. Jupyter Notebook- Tutorial 2. Bank Marketing Dataset Chapter 5 & 8 (Book 2) ² Lab Assignment 10 (a&b)	CLO3	Working with Pandas <ul style="list-style-type: none"> • Introduction to Pandas • DataFrames and Pandas Series • Reading Excel and CSV Files in Jupyter Notebook • Data Description Commands • Indexing & Slicing • Data Aggregation, Pivot Tables and groupby • Concatenation
Week 11 Chapter 7 (Book 2) Lab Assignment 11 & 12	CLO3	Handling Data Quality Problems <ul style="list-style-type: none"> • Missing Values Detection & Configuration • Dealing Incorrect Data as Missing Values • Handling Missing Values, Imputation • Removing Duplicates • Inspecting Data Type Issues • Changing Data Types
Week 12 Chapter 4 (Book2)	CLO2	Working with NumPy <ul style="list-style-type: none"> • NumPy Introduction • Array creation, iteration, indexing, slicing and reshape. • Basic arithmetic operations • Pseudorandom Number Generation (Normal Distribution)
Week 13 &14 Chapter 9 & 13(Book2) Lab Assignment 13	CLO3	EDA using Data Visualization <ul style="list-style-type: none"> • Introduction to Matplotlib, Seaborn and Plotly • Creating and configuring plots using pyplot • Markers and Axis Labels and Titles • Creating Basic Charts (bar, pie, box, histogram, line, scatter Heatmaps)
Final Exam		

Textbook and Pre-Course Reading Material, Important Dates.

Recommended Text:

1. Starting out with Python, Tonny Gaddis, Third Edition / Latest Edition (Book1)
2. Python for Data Analysis: Data Wrangling with pandas, NumPy, and Jupyter (3rd Edition), Wes McKinney (Book2)
3. Think Python – 3rd/Latest Edition

Important Dates

- **Midterm Exam:** March 09-14, 2026
- **Mid-semester Break:** March 16-21, 2026
- **Classes End:** May 12, 2026
- **Final Exam:** May 14-25, 2026
- **Result Submission Deadline:** June 04, 2026

² Python for Data Analysis

Prerequisite Skills and Knowledge to take this Course

None

Assessments and Grading Scheme

Assessment	Due Date	Remarks
Class participation	Ongoing	<u>Punctuality, discipline, and overall interactivity</u> in the class
Quizzes	Ongoing	Hands-On, Hacker Tank, MCQs based on LMS, Concepts
Lab Assignments	Ongoing	Short Lab Assignments related to python and data analysis
Home Assignments	Ongoing	The assignments will be based on end of chapter questions / core concepts / skills and will be submitted through LMS
Project	Before Final Exam	Group project based on a chosen dataset and business problem
Midterm and Final Exam Paper	Exam Weeks	There are two exams of 20+30 weightage

This course follows absolute grading with default IBA grading scale

Assessment	Weight
Class Participation	5%
Quizzes	15%
Home and Lab Assignments	20%
Project	10%
Midterm Exam	20%
Final Exam	30%
Total	100%

Guidelines

- Since subsequent topics are built on previously learned material, it is imperative that students keep up with the material.
- A student who misses a class is responsible for obtaining information on course content, assignments, due dates, test dates, etc.
- Unethical behavior (cheating, plagiarism, proxy attendance) will be strictly penalized as per IBA policy.
- Students are expected to read all topics and solve all end of chapter problems given in the textbook.
- Students are expected to go through all the provided teaching resources and web links.
- **Attendance is mandatory and the IBA general attendance policy applies in this course. No more than 5 absences allowed or as per IBA general attendance policy.**
- **No Email or drop box submission will be accepted for any evaluation task.**
- **10 % deduction on late submission on LMS – No submission will be accepted after the late deadline expires.**
- **In case of make-up exam, IBA general policy applies. A student can request for a make-up exam based on the reason mentioned in IBA make-up exam policy. The faculty may retake the exam or assign average marks based on marks in Quizzes and/or Final Examination.**
- **Any request for a make-up exam should be made to the program office / Examination office keeping the instructor in cc with reasons and proofs.**
- **There is no make-up for any quiz, lab assignment, home assignment and project.**

Technology & Innovation

- All course materials will be posted on LMS, and grades will be posted on UMS. Students are responsible to stay updated on these platforms.

- Students should have credentials to access the lab PCs, internet, UMS, LMS and email account.
- For discussions and course related queries please join the class Whatsapp group and avoid sending direct messages
- In case of course related queries, visit the instructor individually (not in group) during counselling hours after seeking prior appointment.

Experiential Learning Exposure(s)

- Guest Speaker Session/ Group Assignments/ Project

Social Contribution / Impact

- Consideration of the data security, privacy, netiquettes, and copyrights

Academic Conduct

IBA policy

Attendance Policy

IBA policy

Plagiarism Policy

IBA policy

Withdrawal Policy

IBA policy

Policy Regarding the use of AI Tools

The objective of this course is to teach Python as a tool for structured problem-solving and data analysis in a business context. This course is for students with no prior programming experience, focusing on core programming fundamentals, syntax, and computational thinking skills.

AI tools can directly provide solutions, bypassing the critical steps of computational thinking, problem decomposition, algorithm design, and converting logic into Python code. The use of these tools, therefore, contradicts the learning objectives of this course.

Accordingly, the following guidelines apply:

- **Submissions:** Any submitted work (assignments, projects, reports, other) found to be generated by AI tools will not be considered for grading.
- **Self-Learning:** Students are welcome to use AI tools for self-learning or to explore different dimensions of topics covered in class.

Once you've learned the necessary syntax and developed essential skills in this course, using AI tools may be more beneficial in your future work.