

MASTER OF SCIENCE ARTIFICIAL INTELLIGENCE & MACHINE LEARNING (MSCAIML)

MSCAIML/ASSIGN/SEMESTER-I

ASSIGNMENTS

(July – 2026)

**MCS-061, MCS-081, MCS-208, MCS-082, MCSL-209,
MCSL-083**



**SCHOOL OF COMPUTER AND INFORMATION SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110 068**

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Important Notes

1. Submit your assignments to the Coordinator of your Study Centre on or before the due date.
2. Assignment submission before due dates is compulsory to become eligible for appearing in corresponding Term End Examinations. For further details, please refer to MSCAIML Programme Guide.
3. To become eligible for appearing in the Term End Practical Examination for the labcourses, it is essential to fulfill the minimum attendance requirements as well as submission of assignments (on or before the due date). For further details, please refer to the MSCAIML Programme Guide.
4. The viva voce is compulsory for the assignments. For any course, if a student submitted the assignment and not attended the viva-voce, then the assignment is treated as not successfully completed and would be marked as ZERO.

Course Code	:	MCSL-083
Course Title	:	Programming and AI Lab
Assignment Number	:	MSCDSA(I)/L-083/Assign/2026
Maximum Marks	:	100
Weightage	:	30%
Last Date of Submission	:	31st October, 2026 (for July 2026 Session)

Note: The assignment has two sections A and B. Section A is based on Python Programming and Section B is based on Artificial Intelligence. Answer all the questions. Each section is for 20 marks. The lab record carries 40 Marks. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the MSCAIML) Programme Guide for the format of presentation. If any assumptions made, please state them.

Section A: Python Programming

- Q1:** Write a Python script that generates a 4×4 nested list (matrix) containing integer values from 1 to 16. Without using any external libraries, write logic to: **(3 Marks)**
- Extract and print the inner 2×2 sub-matrix
 - Reverse the rows of the matrix in-place.
- Q2:** Design an OOP application for an inventory system of an online shopping portal. Create an Item class with attributes like name, price, and stock count etc. Make necessary assumptions. **(7 Marks)**
- Q3:** Build a fully interactive graphical user interface using Tkinter for currencies conversion. The window should feature an input box for an amount, a dropdown menu to select target currencies, a conversion trigger button, and a persistent display label mapping the calculated results. Make necessary assumptions. **(7 Marks)**
- Q4:** Write a data visualization script using Matplotlib to build a single Figure containing two side-by-side subplot Axes grids:
- Subplot 1: A line chart representing trend progression values over a timeline.
 - Subplot 2: A scatter plot diagram highlighting coordinate cluster spaces.

Note: Add clear axis titles, customised colour mappings, legends, and bounding grid markers across the visual plots. **(3 Marks)**

Section B: Artificial Intelligence

- Q1:** Write a Python Program to solve the N-Queen Problem without using Recursion. **(5 Marks)**
- Q2:** Implement the Water Jug problem in Python. **(5 Marks)**
- Q3:** Write a Python Program to implement the Min-Max Algorithm. **(5 Marks)**
- Q4:** Write a Python Program to implement the AO* Algorithm **(5 Marks)**