

AMK RESEARCH LAB

Science • Intelligence • Innovation



12-WEEK BENCHMARK

Artificial Intelligence

• *AI for Cybersecurity*

• *AI for Project Management*

Artificial Intelligence Engineering Certification

Institution AMK Research Lab Platform

Delivery Online • Self-Paced • Lecture + Lab + Capstone

Duration 12 Weeks

REMEMBER: *this lab has a zero-tolerance policy for plagiarism. To be on the safer side, cite all your work, even images.*

All assignments are mandatory and need to be submitted on or before the deadline. Should you have any questions, reach out to

***your designated course instructor or assessment office
immediately.***

WEEK 1 Assignment 1

FRIDAY - SATURDAY

Course Context

As this course requires a capstone project before certification, students are expected to begin early by identifying a real-world technological problem that can be addressed using Artificial Intelligence (AI) or Machine Learning (ML). It is strongly recommended that the selected topic aligns with the student's career aspirations, professional field, industry needs, or national development priorities.

This first discussion assignment is designed to help students move from a general problem idea toward a focused, feasible, and researchable capstone topic.

Discussion Assignment 1 Instructions

Identify a technological problem within your:

- Area of professional practice
- Community
- District
- Country

that can be addressed using **AI or ML**, then respond to the following:

a. Research Questions

Write **three research questions** arising from the problem you identified.

b. Justification

Explain why this particular challenge needs to be addressed.

c. Tools / Software Stack

List the technological tools, platforms, or software stack you would use to solve or mitigate the problem.

d. Capstone Topic

Formulate a clear and academically appropriate capstone project title based on the identified problem.

Recommended Response Structure

1. Introduction

Briefly describe the problem context.

2. Problem Statement

Explain the technological challenge and its impact.

3. Research Questions

List three focused research questions.

4. Justification

Why is the problem urgent, relevant, or valuable to solve?

5. Proposed AI/ML Tools

Mention tools and explain their purpose.

6. Proposed Capstone Topic

Provide a professional research title.

7. Conclusion

Summarize expected benefits.

References in APA format.

Grading Rubric (100 Marks)

Criteria	Excellent (A)	Good (B)	Satisfactory (C)	Needs Improvement	Marks
Problem Identification	Clear, relevant, real-world challenge with strong AI potential	Relevant problem identified	Basic problem identified	Unclear or weak problem	20
Research Questions	Three clear, focused, researchable questions	Mostly clear questions	Questions somewhat broad	Weak/unrelated questions	20
Justification / Importance	Strong rationale with societal/economic relevance	Good explanation	Basic explanation	Weak justification	15
Tools / Software Stack	Highly relevant tools with clear technical fit	Relevant tools listed	Some tools appropriate	Poor or missing tools	15
Capstone Topic Quality	Clear, professional, innovative, research-ready title	Good title	Acceptable title	Weak / vague title	15
Academic Writing Quality	Excellent grammar, structure, professionalism	Minor issues	Understandable	Frequent errors	10
Originality / Innovation	Highly creative and practical	Good originality	Moderate originality	Generic / copied ideas	5

Total = 100 Marks

What AMK Research Lab Instructors Look For

To score high, your post should demonstrate:

- Real problem-solving mindset
 - Practical AI application awareness
 - Research readiness
 - Logical thinking
 - Career alignment
 - Professional communication
 - Innovation potential
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Examples of Strong Topic Areas

Healthcare

AI for diabetes monitoring in rural clinics

Cybersecurity

ML for phishing attack detection in SMEs

Education

AI tutoring platform for low-resource schools

Agriculture

Crop disease detection using computer vision

Finance

Fraud detection using anomaly detection

Smart Cities

Traffic congestion prediction using AI

Example of a Strong Capstone Topic

AI-Powered Smart Agriculture Decision Support System for Smallholder Farmers in Ghana Using IoT and Machine Learning

Submission Tips for Distinction

- Choose a real problem you understand well
- Align topic with future career goals
- Keep research questions measurable
- Use modern tools (Python, TensorFlow, SQL, Power BI, AWS, etc.)
- Write professionally
- Be original and realistic

Include:

- One recent citation
- One figure or flowchart
- Expected benefits
- Risks and limitations



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Training Instructor

Research Focus

- Artificial Intelligence & Machine Learning | AI-Enabled Networking & UAV Systems
- Cyber-Physical Systems Security | IoT, Edge Intelligence & Resilient Communications | AI Governance, Safety & Trustworthy Systems

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