# Program Viewbook

## Master of Science in Artificial Intelligence (MScAI)

### Program Description

The Master of Science in Artificial Intelligence (MScAI) program is a cutting-edge academic initiative designed to equip students with the advanced skills and knowledge necessary to thrive in the rapidly evolving field of AI. The curriculum encompasses key areas such as Machine Learning, Deep Learning, Natural Language Processing, Computer Vision, Robotics, Data Science, and Optimization Algorithms, providing a comprehensive understanding of both theoretical concepts and practical applications. Focused on addressing industry needs, the program emphasizes ethical considerations in AI development, ensuring graduates appreciate the societal implications of their work. Through collaborative projects, research, and partnerships with local businesses, students gain invaluable real-world experience and networking opportunities.

Graduates of the MScAI program will be prepared for diverse and dynamic careers across industry including AI System Architect, Prompt Engineer, LLM Engineer, Data Scientist, AI Engineer, AI Research Scientist, AI Product Manager, Robotics Engineer, AI User Experience (UX) Designer, AI Strategy Consultant, Business Intelligence Analyst, and AI Ethics Consultant.

### Program Learning Outcomes (PLOs)

PLO 1: Demonstrate comprehensive and advanced knowledge of AI concepts and research techniques to analyze complex, real-world interdisciplinary problems for innovative solutions.

PLO 2: Design, implement, and critically evaluate collaborative solutions to meet specific requirements in the AI discipline.

PLO 3: Demonstrate specialized communication and information technology skills to present, explain, and critique highly complex AI solutions and concepts in diverse professional contexts.

PLO 4: Function effectively in different roles within a team to achieve AI initiatives incorporating strategic insight and an entrepreneurial approach.

PLO 5: Evaluate the legal, societal, and ethical implications of AI solutions to ensure compliance with regulations and standards for responsible and professional deployment in real-world applications.

PLO 6: Engage in continuous learning and professional development to stay current with emerging trends and advancements in AI.

### Program Completion Requirements

The Master of Science in Artificial Intelligence (MScAI) degree shall be awarded to a student who is officially enrolled in the program and has fulfilled the following requirements:

- Successful completion of 33 credit hours.
- Achievement of a minimum cumulative GPA of 3.0 on a 4.0 scale.
- Completion of at least 75% of total program credit hours at CUD.
- Completion of the Thesis while enrolled at CUD.

## Program Structure

| | |
|---|---|
| **Core Courses** | **18 Cr. Hrs.** |
| **Electives** | **09 Cr. Hrs.** |
| **Thesis** | **06 Cr. Hrs.** |
| **Total** | **33 Cr. Hrs.** |

## List of Courses

### I. Core Courses

| Course | | | Prerequisite | Cr. Hrs. |
|---|---|---|---|---|
| | | | | **18** |
| MAI | 600 | Mathematics and Statistics for AI | None | 3 |
| MAI | 601 | Data Mining | None | 3 |
| MAI | 602 | Machine Learning | None | 3 |
| MAI | 603 | Advanced Artificial Intelligence | None | 3 |
| MAI | 604 | Deep Learning | None | 3 |
| MAI | 605 | Research Methods | None | 3 |

### II. Technical Elective Courses

| Course | | | Prerequisite | Cr. Hrs. |
|---|---|---|---|---|
| **Elective Courses (09 Credits):** Students are required to select three courses from the following courses | | | | **09** |
| MAI | 650 | Nature-Inspired Computing | MAI 603 | 3 |
| MAI | 651 | Speech Recognition | MAI 602 | 3 |
| MAI | 652 | Computer Vision | MAI 603 | 3 |
| MAI | 653 | Internet of Things | MAI 602 | 3 |
| MAI | 654 | AI in Cybersecurity | MAI 602 | 3 |
| MAI | 655 | Selected Topic in Artificial Intelligence | MAI 602, MAI 603 | 3 |
| MAI | 656 | Nature Language Processing | MAI 602, MAI 603 | 3 |

### III. Dissertation of Applied Research Projects

| Course | | | Prerequisite | Cr. Hrs. |
|---|---|---|---|---|
| MAI | 606 | Master's Thesis | Completed 21 Cr. Hrs. | 6 |

### Remedial Courses

| Course | | | Prerequisite | Cr. Hrs. |
|---|---|---|---|---|
| MAI | 501 | Programming for AI Applications | None | 3 |
| MAI | 502 | Introduction to AI | None | 3 |
| MAI | 503 | Applied Discrete Mathematics | None | 3 |

## Four Semesters Study Plan-Fall Intake

| Semester | Course Code | | Subject Title | Prerequisite | Cr. Hrs. |
|---|---|---|---|---|---|
| 1 | MAI | 600 | Mathematics and Statistics for AI | None | 3 |
| | MAI | 601 | Data Mining | None | 3 |
| | MAI | 602 | Machine Learning | None | 3 |
| | MAI | 603 | Advanced Artificial Intelligence | None | 3 |
| | **Total Semester Credit Hours** | | | | **12** |
| 2 | MAI | 604 | Deep Learning | None | 3 |
| | MAI | 605 | Research Methods | None | 3 |
| | MAI | xxx | Elective 1 | | 3 |
| | MAI | xxx | Elective 2 | | 3 |
| | **Total Semester Credit Hours** | | | | **12** |
| 3 | MAI | xxx | Elective 3 | | 3 |
| | MAI | 606 | Master's Thesis | Completed 21 Cr. Hrs. | 6 |
| | **Total Semester Credit Hours** | | | | **9** |
| 4 | MAI | 606 | Master's Thesis (cont'd) | Completed 21 Cr. Hrs. | -- |
| **Total Credit Hours** | | | | | **33** |

## Four Semesters Study Plan-Spring Intake

| Semester | Course Code | | Subject Title | Prerequisite | Cr. Hrs. |
|---|---|---|---|---|---|
| 1 | MAI | 602 | Machine Learning | None | 3 |
| | MAI | 603 | Advanced Artificial Intelligence | None | 3 |
| | MAI | 604 | Deep Learning | None | 3 |
| | MAI | 605 | Research Methods | None | 3 |
| | **Total Semester Credit Hours** | | | | **12** |
| 2 | MAI | 600 | Mathematics and Statistics for AI | None | 3 |
| | MAI | 601 | Data Mining | None | 3 |
| | MAI | xxx | Elective 1 | | 3 |
| | MAI | xxx | Elective 2 | | 3 |
| | **Total Semester Credit Hours** | | | | **12** |
| 3 | MAI | xxx | Elective 3 | | 3 |
| | MAI | 606 | Master's Thesis | Completed 21 Cr. Hrs. | 6 |
| | **Total Semester Credit Hours** | | | | **9** |
| 4 | MAI | 606 | Master's Thesis (cont'd) | Completed 21 Cr. Hrs. | -- |
| **Total Credit Hours** | | | | | **33** |