**Plan of Study Grid – A.S. in Artificial Intelligence Development (Transfer)**

**Guided Pathway to Success (GPS)**

**RECOMMENDED FIRST SEMESTER**

| **Course** | **Title** | **Credits** |
| --- | --- | --- |
| ENGL 101 | English Composition I | 3 |
| MATH 185 | Calculus I *(Milestone)* | 4 |
| CMSC 130 | Programming Fundamentals *(Milestone)* | 4 |
| Social & Behavioral Sciences Elective (Gen Ed) | 3 |  |
| **Credits** |  | **14** |

**RECOMMENDED SECOND SEMESTER**

| **Course** | **Title** | **Credits** |
| --- | --- | --- |
| MATH 195 | Calculus II | 4 |
| CMSC 131 | Programming Methods & Object Design *(Milestone)* | 4 |
| **CMIS 102** | **AI Fundamentals** | 3 |
| Biological & Physical Sciences Elective (Gen Ed w/lab) | 4 |  |
| **Credits** |  | **15** |

**RECOMMENDED THIRD SEMESTER**

| **Course** | **Title** | **Credits** |
| --- | --- | --- |
| CMSC 230 | Data Structures & Algorithms *(Milestone)* | 4 |
| **CMSC 240** | **Software Engineering & API Integration** | 3 |
| **CMSC 250** | **Introduction to AI Programming & Frameworks** | 3 |
| Communication Elective (Gen Ed) | 3 |  |
| Arts or Humanities Elective (Gen Ed) | 3 |  |
| **Credits** |  | **16** |

**RECOMMENDED FOURTH SEMESTER**

| **Course** | **Title** | **Credits** |
| --- | --- | --- |
| **CMIS 125** | **Applied Machine Learning & Data Foundations** | 3 |
| **CMSC 260** | **AI Algorithms & Data Structures** | 3 |
| **CMIS 299** | **Applied AI Development Capstone *(Milestone)*** | 3 |
| CMIS, CMSC, or MATH Elective | 3–4 |  |
| Social & Behavioral Sciences Elective (Gen Ed – different discipline) | 3 |  |
| **Credits** |  | **15–17** |

**Total Credits: 60–62**

**Proposed New/Modified CMIS & CMSC Courses**

Below are the new and revised courses that anchor the *A.S. in Artificial Intelligence Development (Transfer)* pathway. These courses modernize the traditional Computer Science sequence to include artificial intelligence, machine learning, and cloud-integrated software development.

**CMIS 102 – AI Fundamentals (3 credits)**

Introduces the principles, tools, and social impact of artificial intelligence. Topics include generative AI, large language models, prompt engineering, and ethical considerations. Hands-on practice with cloud-based AI tools builds readiness for entry-level AI development and cross-disciplinary collaboration.  
**Certification Alignment:** Google Cloud GenAI Leader, Microsoft AI-900.

**CMIS 125 – Applied Machine Learning & Data Foundations (3 credits)**

Applies core AI and data science concepts through supervised and unsupervised learning. Students use Python and cloud notebooks to clean, prepare, and model data, focusing on evaluation, interpretability, and ethical deployment of machine learning systems.  
**Certification Alignment:** AWS Machine Learning Foundations, Google AI Essentials.

**CMSC 240 – Software Engineering & API Integration (3 credits)**

**Prerequisites:** CMSC 131 or permission of program manager  
Focuses on collaborative software development, design patterns, and integration of APIs, SDKs, and microservices for AI-based systems. Students use version control, testing frameworks, and documentation tools to build maintainable, scalable applications.  
**Certification Alignment:** GitHub Foundations, AWS Cloud Practitioner.

**CMSC 250 – Introduction to AI Programming & Frameworks (3 credits)**

**Prerequisites:** CMSC 131, CMIS 102  
Introduces programmatic access to AI tools and frameworks used in modern development. Students write Python programs using TensorFlow, PyTorch, and Hugging Face libraries to implement neural networks, embeddings, and natural language models.  
**Certification Alignment:** Google AI Essentials, TensorFlow Developer.  
**Milestone Course.**

**CMSC 260 – AI Algorithms & Data Structures (3 credits)**

**Prerequisites:** CMSC 230, CMSC 250  
Explores algorithms fundamental to artificial intelligence and machine learning, including search, optimization, classification, and graph-based reasoning. Students analyze algorithmic complexity and performance trade-offs in AI-driven contexts.  
**Certification Alignment:** AWS AI Practitioner, CompTIA Data+.

**CMIS 299 – Applied AI Development Capstone (3 credits)**

**Prerequisites:** CMIS 125, CMSC 250, CMSC 260, or permission of program manager  
This culminating experience integrates concepts from AI programming, data science, and cloud software development through a project-based approach. Students design, implement, and present an AI-driven software solution to a real-world problem, demonstrating technical proficiency, ethical awareness, and deployment skills.  
Projects may include generative AI applications, intelligent automation, or model-driven web and mobile systems.  
**Certification Alignment:** Google Cloud GenAI Leader, AWS AI Practitioner, CompTIA SecAI+.

**Optional Substitutions / Special Topics**

To keep the degree flexible for future expansion, the following could be offered as electives or rotating special topics (CMSC 2xx):

| **Course** | **Title** |
| --- | --- |
| **CMSC 270 – AI for Cloud & Edge Devices** | Deployment of AI models on cloud or IoT devices (AWS SageMaker, NVIDIA Jetson). |
| **CMSC 280 – Responsible AI & Human-Centered Computing** | Ethics, fairness, and user-centered AI design. |
| **CMSC 285 – AI Developer Capstone (Alternative)** | Project-based AI application design for students transferring into AI-focused B.S. programs. |

**Program Outcomes**

Graduates of the **A.S. in Artificial Intelligence Development** will be able to:

1. Apply programming, data structures, and algorithmic reasoning to AI development.
2. Implement and integrate AI and machine learning frameworks in software systems.
3. Deploy and manage AI models in secure, cloud-based environments.
4. Use ethical and responsible AI principles in model design and data handling.
5. Demonstrate readiness for transfer to upper-division programs in Computer Science, Artificial Intelligence, or Data Science.

**Transfer Notes**

This program prepares students for transfer to universities offering bachelor’s degrees in:

* **Artificial Intelligence**
* **Computer Science**
* **Data Science**
* **Software Engineering**
* **Machine Learning or Intelligent Systems**