UNIVERSITY of MARYLAND
SCHOOL OF PHARMACY

MS in AI for Drug Development: Building a New Graduate Program

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Take -Home Message

AI can be applied to many areas, but a new degree with AI requires careful planning

Many programs chasing the AI wave – and approval agencies know this

Application to an area is critical (AI is a tool)

Targeted recruitment

The next few slides are indeed advertising from our website…

https://www.pharmacy.umaryland.edu/academics/ai-drug-development/

Revolutionize Drug Development with AI Mastery

Step into the future of pharmaceuticals with the MS in AI for Drug Develop-

ment program. Harness cutting-edge technologies like natural language

processing and machine learning to accelerate innovation at every stage of

drug development.

From strategic planning to clinical trial optimization, this program empowers professionals to lead the transformation of health care. **Unlock the potential of AI and position yourself as a trailblazer in health care.**

The MS in AI for Drug Development (AIDD) program is designed for professionals with bachelor's, master's, or terminal degrees who aspire to transform into decision -making data scientists in pharmaceutical, biotechnology or government institutions.

Graduates of the MS in AIDD will:

- Apply advanced AI and analytical techniques to streamline drug development and clinical trials.
- Build and lead high-performance teams equipped with next-generation problem-solving capabilities.
- Shape strategic decisions in pharmaceutical innovation with a data-driven mindset.

The program is particularly well-suited for professionals in areas such as:

- Pharmaceutical or biotechnology industry
- Government agencies
- Engineering
- Statistics
- Data sciences
- Pharmaceutical sciences
- Epidemiology
- Students enrolled in the MS in AI for Drug Development program can study at their own pace, and choose to complete the 30-credit program in four or seven semesters.

Four-Semester Schedule | Seven-Semester Schedule

Course Number	Semester	Course	Pre-Requisites	Credits
AIDD 601	Fall Y1	Introduction to Drug Development	None	3
AIDD 602	Fall Y1	AI Methodology I	None	4
AIDD 603	Spring Y1	AI Methodology II	AIDD 601, AIDD 602	4
AIDD 604	Spring Y1	Drug Development Strategy	AIDD 601	4
AIDD 605	Summer Y1	Pharmacovigilance	AIDD 601, AIDD 602, AIDD 603	4
PHAR 758	Summer Y1	Special Topics	None	3
AIDD 606	Fall Y2	Precision Medicine	AIDD 601, AIDD 602	4
AIDD 607	Fall Y2	Optimizing Clinical Research	AIDD 602, AIDD 603	4

Course Descriptions

AIDD 601: Introduction to Drug Development (3 credits)

This graduate-level course provides a comprehensive overview of the drug development process, from drug discovery to post-marketing surveillance. Students will explore the fundamental principles and practices of drug development, including regulatory requirements, preclinical and clinical testing, pharmacovigilance, and marketing approval processes.

Course Descriptions

AIDD 601: Introduction to Drug Development (3 credits)

This graduate-level course provides a comprehensive overview of the drug development process, from drug discovery to post-marketing surveillance. Students will explore the fundamental principles and practices of drug development, including regulatory requirements, preclinical and clinical testing, pharmacovigilance, and marketing approval processes.

(AI is not mentioned!)

Four-Semester Schedule | Seven-Semester Schedule

Course Number	Semester	Course	Pre-Requisites	Credits
AIDD 601	Fall Y1	Introduction to Drug Development	None	3
AIDD 602	Fall Y1	AI Methodology I	None	4
AIDD 603	Spring Y1	AI Methodology II	AIDD 601, AIDD 602	4
AIDD 604	Spring Y1	Drug Development Strategy	AIDD 601	4
AIDD 605	Summer Y1	Pharmacovigilance	AIDD 601, AIDD 602, AIDD 603	4
PHAR 758	Summer Y1	Special Topics	None	3
AIDD 606	Fall Y2	Precision Medicine	AIDD 601, AIDD 602	4
AIDD 607	Fall Y2	Optimizing Clinical Research	AIDD 602, AIDD 603	4

Course Descriptions

AIDD 602: AI Methodology I (4 credits)

The applications of Artificial Intelligence and Machine Learning (AI/ML) methodologies are ubiquitous, and the pharmaceutical industry is rapidly adapting to the AI/ML advancements in drug development. This graduate level course will provide an introductory exploration into the methodology and techniques of AI/ML. Students will learn fundamental concepts, methods, and best practices in AI/ML, including problem formulation, data preprocessing, model selection, evaluation, and interpretation. Students learn and apply supervised learning techniques in this course. Through lectures, hands-on exercises, and real-world case studies, students will gain practical skills to apply AI/ML methodologies to problems relevant to the health care and drug development domains. Students will learn fundamentals of AI/ML programming using the open-source Python programming language.

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AIDD 602	Fall Y1	AI Methodology I	None	4
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AIDD 604	Spring Y1	Drug Development Strategy	AIDD 601	4
AIDD 605	Summer Y1	Pharmacovigilance	AIDD 601, AIDD 602, AIDD 603	4
PHAR 758	Summer Y1	Special Topics	None	3
AIDD 606	Fall Y2	Precision Medicine	AIDD 601, AIDD 602	4
AIDD 607	Fall Y2	Optimizing Clinical Research	AIDD 602, AIDD 603	4

Course Descriptions

AIDD 604: Drug Development Strategy (4 credits)

This graduate-level course provides a comprehensive overview of the strategic aspects of drug development, focusing on the critical decisions and considerations that drive successful drug development programs. Students will explore the key principles and practices of drug development strategy, including target product profile, regulatory strategy, market access, and lifecycle management.

(AI is not mentioned!)

Four-Semester Schedule | Seven-Semester Schedule

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AIDD 602	Fall Y1	AI Methodology I	None	4
AIDD 603	Spring Y1	AI Methodology II	AIDD 601, AIDD 602	4
AIDD 604	Spring Y1	Drug Development Strategy	AIDD 601	4
AIDD 605	Summer Y1	Pharmacovigilance	AIDD 601, AIDD 602, AIDD 603	4
PHAR 758	Summer Y1	Special Topics	None	3
AIDD 606	Fall Y2	Precision Medicine	AIDD 601, AIDD 602	4
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Conclusions

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