Fall 2026 Hands-on Introduction to AI Course Syllabus

Course Information

- **CRN** - ASM 59100-004
- **Meeting day(s) and time(s) –** 3:30PM to 4:20 PM Wednesday and Friday (Lecture), 3:30 to 5:20PM Thursday (LAB)
- **Course credit hours** - 3
- **Prerequisites (if any)** - none

Instructor Contact Information

- **Name of the instructor** – Upinder Kaur
- **Office Location** – ABE 3018
- **Purdue Email Address** – kauru@purdue.edu
- **Student consultation hours, times, and location** – Monday 1:30PM to 2:30PM

Course Description

This course offers a comprehensive hands-on introduction to Artificial Intelligence (AI), specifically designed for graduate students from non-computing backgrounds. We will approach AI through a systems-thinking lens, focusing on the integration of AI techniques into cohesive, practical solutions across various disciplines, including agriculture, biological engineering, and beyond. This course emphasizes understanding AI beyond machine learning, delving into essential concepts such as reinforcement learning, knowledge representation, and agent-based systems.

Through a combination of lectures, interactive discussions, and practical lab tutorials, we will explore:

- **Problem-Solving with AI**: We will learn how to formulate and solve complex problems using AI, applying search algorithms, logic-based reasoning, and constraint satisfaction techniques to develop robust solutions in diverse fields.
- **Reinforcement Learning and Decision Making**: Students will be introduced to reinforcement learning, exploring how AI systems can learn and make decisions in dynamic environments. We will also investigate advanced topics like deep reinforcement learning and policy gradients.
- **Advanced AI Concepts**: The course will cover cutting-edge AI technologies, including large language models (LLMs) and transformers, examining their architectures, applications, and potential to revolutionize various industries.
- **Ethics and Responsible AI**: We will critically examine the ethical implications of AI, addressing issues of fairness, transparency, and accountability, and discussing the importance of designing AI systems that are socially responsible and equitable.

- **Practical AI Systems Development**: Students will apply their knowledge to design, develop, and deploy AI systems, culminating in a capstone project where they will build a complete AI solution relevant to their field of study.

Throughout the semester, students will engage with relevant literature, participate in hands-on projects, and discuss real-world applications, equipping them with the skills and knowledge to leverage AI in their respective disciplines.

Learning Resources, Technology & Texts

The content of this course will be a combination of lectures and selected reading. The course lecture presentations will be uploaded on Brightspace in course modules. Access to selected readings will be through the Brightspace course readings folder and Library Reading List.

Brightspace learning management system (LMS)

- Access the course via Purdue's Brightspace learning management system. Begin with the Start Here tab, which offers further insight to the course and how you can be successful in it. It is strongly suggested that you explore and become familiar not only with the site navigation, but also with content and resources available for this course. See the Student Services widget on the campus homepage for resources such as Technology Help, Academic Help, Campus Resources, and Protect Purdue.

Learning Outcomes

By the end of this course, the student will be able to:

- **Problem-Solving with AI Systems**: Students will be able to formulate and approach complex real-world problems using a systems-thinking perspective, integrating various AI methodologies beyond traditional machine learning.
- **Application of AI Techniques**: Students will demonstrate proficiency in implementing foundational AI techniques, including search algorithms, knowledge representation, reasoning, reinforcement learning, and agent-based systems, applying them to interdisciplinary problems.
- **Design and Development of AI Solutions**: Students will be able to design, develop, and deploy AI-driven solutions, considering the full lifecycle of an AI system, from problem identification to implementation and evaluation in a practical context.
- **Ethical and Responsible AI**: Students will critically assess the ethical implications of AI technologies, understanding the importance of fairness, accountability, transparency, and the societal impact of AI systems.
- **Emerging AI Technologies**: Students will gain an understanding of advanced AI concepts, including large language models and transformers, and their applications in various domains, preparing them to stay current with ongoing advancements in AI technology.

Assignments

Your achievement of course learning outcomes will be assessed through a combination of participation, weekly lab submission, a midterm exam, a final exam, and a final project spread throughout the academic period. Details on these papers, including a schedule of due dates, rubrics to guide evaluation, and guidelines on discussion participation and evaluation will be posted on the course website.

Assessments	Due	Grade %
Weekly Lab Submission	One Week After Lab Session	25
Class Participation	ongoing	5
Mid-Term Exam	20/7/2026	15
Final Project	11/25-12/6	30
Final Exam	TBD	25
	Total	100

Grading Scale

In this class, grades reflect the sum of your achievement of learning outcomes throughout the semester. You will accumulate points as described in the assignments portion above, with each assignment graded according to a rubric. At the end of the semester, final grades will be calculated by adding the total points earned and translating those numbers (out of 100) into the following letters (there will be no partial points or rounding).

A: 100 - 89

B: 88 - 78

C: 77 - 67

D: 66 - 56

F: 55 or below

Attendance Policy

This course follows the University Academic Regulations regarding class attendance, which state that students are expected to be present for every meeting of the classes in which they are enrolled. Attendance will be taken at the beginning of each class and lateness will be noted. When conflicts or absences can be anticipated, such as for many University-sponsored activities and religious observations, you should inform me of the situation as far in advance as possible. For unanticipated or emergency absences when advance notification to is not possible, contact me as soon as possible by email or phone. For absences that do not fall under excused absence regulations (see below), this course follows the following procedures:

1. Do not come to class if you are feeling ill, but DO email me at kauru@purdue.edu, with the subject line: ASM591 absence. I do not need details about your symptoms. Just let me know you are feeling ill and cannot come to class. If it is an emergency situation, please follow the University regulations on emergent medical care (see below).
2. Unless it falls under the University excused absence regulations (see below), any work due should be submitted on time via our course Brightspace.
3. If that day's class involves assessed work such as a test or presentation, you and I will plan if and how you can make up the work, following the assignment guidelines. This plan must be done before the next class period, so again, email me immediately when you know that you will miss class.
4. The most important consideration in any absence is how it will affect your achievement of the assignment objectives and the course learning outcomes.

For cases that fall under excused absence regulations, you or your representative should contact or go to the Office of the Dean of Students (ODOS) website to complete appropriate forms for instructor notification. Under academic regulations, excused absences may be granted by ODOS for cases of grief/bereavement, military service, jury duty, parenting leave, or emergent medical care. The processes are detailed, so plan ahead.

Course Schedule

The course schedule is posted on Brightspace separately.

Course Logistics

Deadlines are an unavoidable part of being a professional and this course is no exception. Course requirements must be completed and posted or submitted on or before the specified due date and delivery time deadline. Due dates and delivery time deadlines are defined as that used in West Lafayette, Indiana. To encourage you to stay on schedule, due dates have been established for each assignment; 20% of the total points will be deducted for assignments received 1-6 days late; assignments received more than 1 week late will receive 0 points.

Academic Integrity

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information is submitted the greater the opportunity for the university to investigate the concern. More details are available on our course Brightspace under University Policies and Statements.

Nondiscrimination Statement

A hyperlink to Purdue's full Nondiscrimination Policy Statement is included in our course Brightspace under University Policies and Statements.

Accessibility

Purdue University strives to make learning experiences accessible to all participants. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone at 765-494-1247.

Mental Health/Wellness Statement

If you find yourself beginning to feel some stress, anxiety and/or feeling slightly overwhelmed, try Therapy Assistance Online (TAO), a new web and app-based mental health resource available courtesy of Purdue Counseling and Psychological Services (CAPS)**.** TAO is available to students, faculty, and staff at any time.

If you need support and information about options and resources, please contact or see the Office of the Dean of Students. Call 765-494-1747. Hours of operation are M-F, 8 a.m.- 5 p.m.

If you find yourself struggling to find a healthy balance between academics, social life, stress, etc., sign up for free one-on-one virtual or in-person sessions with a Purdue Wellness Coach at RecWell. Student coaches can help you navigate through barriers and challenges toward your goals throughout the semester. Sign up is free and can be done on BoilerConnect.

If you're struggling and need mental health services: Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed,

depressed, and/or in need of mental health support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at 765-494-6995 during and after hours, on weekends and holidays, or by going to the CAPS office on the second floor of the Purdue University Student Health Center (PUSH) during business hours.

Diversity, Inclusion & Belonging Statement

We strive for equity, providing equal access and opportunity, and working to maximize student potential. This requires both instructor and students to identify and remove barriers that may prevent someone from full access or full participation. You can help by:

- Contacting me, anonymously if needed, if you see a potential barrier for someone or yourself in participating fully in the class. This might be a physical barrier such as access to technology or a personal situation.
- Suggesting ways in which members of our class can support each other. Virtual study groups and discussion boards are examples, but I encourage you to be creative in your ideas.
- Getting to know each other as contributing members of our learning community. Everyone has something to contribute, and while I designed the course to take advantage of the wealth of knowledge, expertise, and experience we bring together, I cannot do it well without your participation. There are many opportunities built into this course for this type of work. It is important we do it together.

Basic Needs Security

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. There is no appointment needed and Student Support Services is available to serve students 8 a.m.-5 p.m. Monday through Friday.

Emergency Preparedness

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email on a frequent basis.

A link to Purdue's Information on Emergency Preparation and Planning is located on our Brightspace under "University Policies and Statements." This website covers topics such as Severe Weather Guidance, Emergency Plans, and a place to sign up for the Emergency Warning Notification System. I encourage you to download and review the *Emergency Preparedness for Classrooms document (**PDF**) or (**Word**).*

The first day of class, I will review the **Emergency Preparedness plan for our specific classroom**, following Purdue's required Emergency Preparedness Briefing. Please make note of items like:

- The location to where we will proceed after evacuating the building if we hear a fire alarm.
- The location of our Shelter in Place in the event of a tornado warning.
- The location of our Shelter in Place in the event of an active threat such as a shooting.