Course Syllabus

1. Course Number 3099704
2. Course Credit 2 (1-1-6)
3. Course Title AI for Digital Health
4. Faculty Faculty of Medicine
5. Semester 2nd Semester
6. Academic Year 2025
7. Instructor Professor Peerapon Vateekul, Ph.D.
8. Conditions -
9. Course Type Required
10. Curriculum Master of Science Program in Digital Health
11. Degree M.Sc.
12. Hours / Week 3 hours of lecture & workshop for 10 times
13. Course Description

This course covers the basics of artificial intelligence (AI) and machine learning (ML), including deep learning, generative AI, and problem-solving techniques using AI. Students will gain hands-on experience in developing AI prototypes and introductory programming for AI applications.

A key focus of the course is integrating AI technology into healthcare systems to address current healthcare challenges and enhance digital health services. Students will explore the significance of medical AI, potential biases and risks associated with AI implementation in healthcare, and essential data preprocessing techniques to improve data quality before using it in AI models. Additionally, the course covers methods for developing and evaluating AI systems to ensure their reliability and effectiveness in healthcare applications.

14. Schedule: The session will be conducted via Zoom. Please have your laptop prepared for the workshop.

#	Date (5PM-8PM)	Topic	Note
1	Wed 7 Jan 2026	Introduction to AI/ML (Data Table) Data Preparation Supervised Learning (1)	Tools: KNIME & Python
2	Thu 8 Jan 2026	Supervised Learning (2) Unsupervised Learning	Tools: KNIME & Python
3	Fri 9 Jan 2026	Introduction to Deep Learning Image Classification (e.g., skin cancer detection)	Teachable Machine Pytorch

4	Tue 13 Jan 2025	Object Detection (e.g., polyp detection)	Tools: YOLO & Pytorch
5	Wed 14 Jan 2026	Image segmentation 2D (e.g., X-ray), 3D (e.g., CT-Scan)	Tools: YOLO & Pytorch
6	Thu 15 Jan 2026	Image Labeling tools (e.g., LebelMe, CVAT, etc.)	
7	Fri 16 Jan 2026	Interesting SDKs, e.g., facial expression & speech (ASR)	Group Project Assignment
8	Tue 20 Jan 2025	Introduction to GenAI/LLM Prompting	Tools: N8N & Python
9	Wed 21 Jan 2026	Advanced LLM (OCR & RAG)	Tools: N8N & Python
10	Thu 22 Jan 2026	Project Presentation	

14.1 Teaching Method: Lecture & Lab

14.2 Teaching Media: Zoom & myCourseVille

14.3 Assignments: Assignments might be assigned by the instructor of each section.

14.4 LMS:

- myCourseVille: http://www.myCourseVille.com (registration code: “Agentic”)
- GitHub: https://github.com/pvateekul/digitalhealth-ai2025/
- Discord: https://discord.gg/JDjjdze9fe

14.5 Evaluation: S/U

- Attendance 5%
- Assignment 45%
- Project 50%