HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY AND EDUCATION

FACULTY OF ELECTRICAL AND ELECTRONICS ENGINEERING

Programme: Biomedical Engineering

Programme Level: Undergraduate

Syllabus

1. **Course name:** Fundamentals and applications of AI
2. **Course code:** AIFA436864
3. **Credits: 3** credits (3:0:6) (3 lecture periods, 0 lab period, 6 self-study periods per week)
4. **Instructors**
   a. Chief lecturer: Assoc. Prof. Dr. Truong Ngoc Son
   b. Co-lecturers:
   M.Eng. Le Minh
   M.Eng. Truong Quang Phuc
5. **Course Requirements**

Prerequisite course(s): None

Previous course(s): Program-C Language

6. **Course Description**

The AI Foundations and Applications course provides students the foundational knowledge of artificial intelligence and applications. The course is designed to include the foundational knowledge of applied math, probability theory, artificial neural networks and deep learning. In addition, the course equips skills in programming artificial intelligence applications using Python language and building recognition applications.

7. **Learning Outcomes (CLOs)**

CLOs	**Descriptions** *On successful completion of this course students will be able to:*	**ELO(s) /PI(s)**	**Compe-tency**
CLO1	Ability to apply knowledge of applied mathematics, artificial neural networks, neural network modeling methods, deep learning concepts, to analyze and design artificial intelligence applications in practice.	ELO1/PI1.2	R
CLO2	Ability to analyse problems and apply skills in programming artificial intelligence applications for problems of object recognition	ELO7/PI7.2	I
CLO3	Ability to work in a team with skills in software development of projects	ELO5/PI5.2	I
CLO4	Ability to write reports, present reports on technical design.	ELO6/PI6.1	R

8. **Content outline**

- Applied Math in AI
- Introduction to artificial intelligence (AI)
- Linear regression
- Artificial Neural Network
- Unsupervised learning
- Deep Feedforward Network
- Deep learning

- AI Application Development

9. Teaching Methods

- *Powerpoint presentation*
- *Teamwork*

10. Assessment(s)

- Grading scale: **10**
- Assessment plan:

No.	Content	CLOs	Compe-tency	Assessment methods	Assessment tools	Weighting %
Summative assessment						**100**
1	Basic knowledge of AI	CLO1	R	Multichoice questions	Online/paper sheets	10
2	Perform project: develop AI application	CLO2,3,4	I,I,R	Written	Rubric	20
3	Parts related to AI types	CLO1	R	Essay	Online/paper sheets	20
Summative assessment						**50**
4	Knowledge applied to solve AI problems	CLO1,2	R	Essay	Online/paper sheets	50

11. Learning Materials

- Textbook(s): [1] George F Luger, Artificial intelligence, structure and strategies for complex problem solving, Peason Education, Inc., 2009
- References: [1] Tom M Mitchell, Machine learning, McGraw-Hill Science, 1997

12. General Information:

Academic Integrity

All students in this class are subject to HCMUTE's Academic Integrity Policy (http://sao.hcmute.edu.vn/) and should acquaint themselves with its content and requirements, including a strict prohibition against plagiarism. Any violations will be reported to the Faculty of Electrical and Electronic Engineering Dean's office.

Flexibility Notice

Any information in this syllabus (other than grading and absence policies) may be subject to change with reasonable advanced notice. Students need to regularly update the information of their registered class.

Intellectual Property

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13. Approval Date: *<dd/mm/yyyy>*

14. Endorsement:

Dean	Head of Department	Chief Lecturer
Assoc. Prof. Dr. Nguyen Minh Tam	**Assoc. Prof. Dr. Phan Van Ca**	*<Full Name>*

15. Revision History:

1st Revision: <*dd/mm/yyyy*>	Lecturer: Head of Department: **Assoc. Prof. Dr. Phan Van Ca**
2nd Revision: <*dd/mm/yyyy*>	Lecturer: Head of Department: