

Curriculum of Artificial Intelligence

Xidian University

**The information below is extracted from the existing curriculum for your reference. The university reserves the right to adjust the curriculum as appropriate. Therefore, please refer to the curriculum used in the year of entry as final curriculum.*

1. Program Overview

University: Xidian University

School: School of Artificial Intelligence

Major: Artificial Intelligence

Duration: 4 Years

Awarding Degree: Bachelor of Engineering

2. Teaching Outcome

This programme aims to develop high-level professional talent with the following knowledge and skills:

1. a solid theoretical foundation and practical skills for innovative thinking and mathematical thinking;
2. mastery of multi-disciplinary knowledge of electronics, computer, biology, communication and control;
3. ability to engage in artificial intelligence software and hardware

development and management;

4. foreign language proficiency and communicative skills, master;

5. a mindset for innovation.

3. Curriculum

(1)Course Number: AI202008

Course: (Introduction of Artificial Intelligence)

Hours: 56 Credits: 3.5

Introduction: Introduction of Artificial Intelligence is a professional basic course of artificial intelligence. This course is an introductory course in the field of artificial intelligence, introducing the basic theories, methods and technologies of artificial intelligence. A good foundation is laid for further research work and software practice in the field of artificial intelligence. Through the study of this course, students can master the basic ideas and implementation methods of artificial intelligence, master basic analysis and design methods, lay the foundation for the application of artificial intelligence in various fields, and broaden students' knowledge in the field of computer science and technology.

(2)Course Number: AI204025

Course: (Machine Learning)

Hours: 56 Credits: 3.5

Introduction: Machine learning is a very important basic professional course in the field of intelligence science. Through the study of this course, students will have a comprehensive understanding of the current mainstream machine learning theories, methods, algorithms and applications, including: Understand the development and status of the field of machine learning; understand and master the basic concepts of machine learning, Principles, methods and techniques; be able to use machine learning methods to solve practical problems (such as intelligent game programs, image recognition, text classification and processing, etc.); establish the basis of related concepts and methods for further research. This course emphasizes the teaching of the theoretical principles of machine learning, focusing on starting from examples to enable students to understand the concepts and principles of machine learning, and to understand the similarities and differences between different machine learning methods from the basic framework of machine learning. The course also emphasizes the combination of theory and practical hands-on ability. Arrange 7-8 homework assignments and 2-3 course experiments. The course requires students to be able to solve practical problems based on the basic principles and methods they have learned.

(3)Course Number: AI205005

Course: (Knowledge Engineering)

Hours: 32 Credits: 2

Introduction: Knowledge engineering is the principle and method of artificial intelligence, which provides a means of solving application problems that require expert knowledge. Appropriate use of expert knowledge acquisition, representation, and the formation and interpretation of inference processes are important technical issues in designing knowledge-based systems. Knowledge engineering is a knowledge-based system, that is, an expert system established through intelligent software. Knowledge engineering can be regarded as the development of artificial intelligence in knowledge information processing, which studies how to represent knowledge by computer and solve problems automatically. The research of knowledge engineering has turned the research of artificial intelligence from theory to application, from the model based on reasoning to the model based on knowledge, including the research of the whole knowledge information processing, and knowledge engineering has become an emerging marginal subject.

(4)Course Number: AI205002

Course: (Introduction of Computational Intelligence)

Hours: 32 Credits: 2

Introduction: Computational intelligence is the science of simulating nature to solve complex problems. It is the science of biology, neuroscience, cognitive science, computer science, immunology, philosophy, sociology, mathematics, information science, nonlinear science, engineering. It is the latest achievement of people's understanding and simulation of natural intelligence. At present, computational intelligence has become one of the most active research fields in intelligence and information science. Its in-depth development will greatly change people's ability and level to understand nature and solve practical problems.

Introduction to Computational Intelligence This course introduces three typical paradigms of computational intelligence, namely artificial neural networks, evolutionary computation, and fuzzy systems, which model the following natural systems: biological neural networks, evolution, and human thought processes, respectively. Through the study of this course, students are required to understand and master computational intelligence models such as artificial neural networks, evolutionary computation and fuzzy systems.

(5) Course Number: AI204004

Course: (Introduction to Pattern Recognition)

Hours: 56 Credits: 3.5

Introduction: Pattern recognition is a technical science that emphasizes both theory and application, and is closely related to artificial intelligence. Its purpose is to use machines to complete the work of human intelligence to recognize the external environment through vision, hearing, touch and other senses. Through the study of this course, students will systematically master the basic principles of pattern recognition and typical methods of classifier design, including: Bayesian decision theory, linear discriminant function, nearest neighbor method, feature selection and extraction, unsupervised learning methods, artificial neural Networks, Fuzzy Pattern Recognition Methods, Support Vector Machines. At the same time, through large assignments, students can understand the application of pattern recognition methods in text recognition, intelligent image processing and other fields, which will help students to improve their comprehensive ability and overall quality.

(6)Course Number: AI202017

Course: (Brain Science)

Hours: 32 Credits: 2

Introduction: Neurobiology and brain science is a multidisciplinary course, whose mission is to study the structure and function of the nervous system, to the most complex advanced cognitive functions of the brain, which can promote artificial neural networks, artificial

intelligence technology and computer science. the development of science. Through the study of this course, students can understand the structure and function of the nervous system and their interrelationships, understand how the brain perceives external information and controls movement, bioelectrical conduction pathways and signal transmission, the integration of signals in the central system, as well as perception, behavior How are the advanced functions of the brain such as cognition, language, etc. formed. This course can not only lay a theoretical foundation for students to study related courses and professional work in the future, but also inspire students to use brain science theories to explore new artificial intelligence theories, and provide new ideas for the development of artificial intelligence technology and practical methods.

4. Graduation and Degree Awarding Requirements

The minimum total credits for graduation are 148.5 credits and 119.5 credits in the course. The students must pass the school's "Experimental Practice Ability Compliance Test" and College English Test Band 4 or Intramural College English Test Band 4, and meet the relevant regulations of the university's graduation requirements.

Graduation minimum requirements and credit allocation table

	Minimum Graduation Requirements		
	In-class credits	Total credits	Percentage of credits

Type					
General Modules	General fundamental Modules		40.5	41	27.61%
	General Core Modules		5.5	6	4.04%
	General Optional Modules		8	8	5.39%
General Foundational Modules			6	7	4.71%
Subject Modules	Subject Foundational Modules		26	28.5	19.19%
	Subject Core Modules		12.5	14.5	9.76%
	Subject Optional Modules	College Restricted Optional Modules	2.5	3	2.02%
		College Optional Modules	15.5	16	10.77%
	College Common Optional Modules		3	3	2.02%
Concentrated practice session			0	21	14.14%
Improvement			0	0.5	0.34%
Total			119.5	148.5	100.00%