









mathematical thinking into computing thinking, enable them to raise and solve a problem by computational thinking. Computational thinking is featured by the thinking of problem solving.

A categorized and multi-level course system based on the setting of disciplines and majors at Xi'an University of Science and Technology is demonstrated in Table 2.

Table.2. The categorization of courses in the course system

Course	Categorization	Level	Requirement of Computational Thinking
College Computer Fundamentals	Operational Application Course	1	abstraction and formalization, simple problem solution
Java Programming	Operational Application Course	1	abstraction and formalization, problem solution
Numerical Analysis	Algorithmic Fundamental Course	1	transformation of thinking, process design
Design and Analysis of Algorithms	Algorithmic Fundamental Course	2	transformation of thinking, process design
Principles and Application of Data Digging	Algorithmic Application Course	2	establishment of objects, alteration of process, verification of establishment
Artificial Intelligence	Algorithmic Application Course	3	establishment of objects, strategy planning, alteration of process, verification of establishment
Computer Geology	Engineering Application Course	2	transformation of thinking, establishment of objects, strategy planning, problem solution, verification of establishment

## Conclusion

A compound teaching model organically integrates the essential features of computational thinking, teaching contents and teaching methods. The categorized and multi-layer course system reflects the various levels of computational thinking and the different requirements for the cultivation of computational thinking ability. This new education structure that consists the compound teaching models and categorized and multi-layer course system, which is oriented by computational thinking. It studies and targets those courses of computing science and computer education; also it is aimed to transform knowledge education to the cultivation of thinking. Most importantly, it lays a good foundation for the achievement of promoting college students' ability of computational thinking.

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