

## Applied Knowledge Systems

2 units (selection)

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**Target** The course introduces the basic principle and theory of knowledge-based systems, including natural language processing systems, voice language processing systems, information retrieval systems.

**Outline** Knowledge systems to natural language processing, voice language processing, information retrieval and document database. Artificial natural language processing systems, such as automatic building systems of intelligent dictionaries, text understanding and summarization systems, dialog systems, natural language interface systems, text classification systems, natural language analysis systems and knowledge-based machine translation systems.

**Style** Portfolio

**Keyword** *knowledge-based system, natural language processing system, speech and language processing system, information retrieval system, machine translation system*

**Fundamental Lecture** “**Language Modeling**”(1.0), “**Natural Language Understanding**”(1.0)

**Relational Lecture** “**Multimedia Systems and Applications**”(0.5)

**Goal** To learn various methods for constructing knowledge-based intelligent information systems.

**Schedule**

1. Natural language processing systems 1: design and retrieval methods of dictionaries
2. Natural language processing systems 2: design and implementation of parsers
3. Natural language processing systems 3: design and implementation of language understanding systems
4. Machine translation systems 1: rule-based and example-based approaches
5. Machine translation systems 2: super-function
6. Machine translation systems 3: integrated methods
7. Speech and language processing systems 1: design of language models
8. Speech and language processing systems 2: design of acoustic models
9. Speech and language processing systems 3: design of search algorithms

10. Information retrieval systems 1: document retrieval based on vector space models
11. Information retrieval systems 2: retrieval methods based on inverted index files
12. Information retrieval systems 3: design and implementation of intelligent document retrieval systems
13. Intelligent multimedia contents processing systems 1
14. Intelligent multimedia contents processing systems 2
15. Recent topics
16. Assignment

**Evaluation Criteria** Assignment count 100%.

**Textbook** To be introduced in the class.

**Contents** <http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216574>

**Student** Able to be taken by only specified class(es)

**Contact**

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