

## Advanced Electrical Control System

2 units (selection)

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**Target** This class introduces the basic principle of making to high performance and the intelligence in control system used for an industrial machine. And the control design of various control systems is understood.

**Outline** The control system configuration used for the industrial machine is described, and applications of intelligent control method using fuzzy reasoning and neural net works are introduced. Moreover, Current topics of fields mentioned above are introduced.

**Style** Lecture and exercise

**Keyword** *Motion control, Robotics, Fuzzy, Neural network, Genetic algorithm*

**Relational Lecture** “[Advanced Lecture of Intelligent Information Processing](#)” (0.5), “[Advanced Control Theory](#)”(0.5)

**Notice** The lecture form might be changed according to the number of attending a lecture.

**Goal**

1. The configuration of the control system used for an industrial machine should be understood.
2. The intelligent control method should be understood.

**Schedule**

1. Control object
2. Motion control system
3. Two degree-of-freedom control
4. Design method of feedback controller
5. Design method of feedforward controller
6. Fuzzy sets
7. Fuzzy reasoning method
8. Control system application of fuzzy reasoning
9. Artificial neuron model
10. Neural network
11. Learning algorithm of neural network
12. Control system application of neural networks
13. Genetic algorithm
14. Control system application of genetic algorithm
15. Conclusions

**16.** Return of report or examination

**Evaluation Criteria** Total evaluation based on reports, examinations or presentations.

**Textbook** The print is distributed.

**Contents** <http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216722>

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

**Contact**

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p) MAIL (Office Hour: Monday, 15:00-17:30)