

Advanced Nonlinear Circuit Technology

2 units (selection)

Yoshifumi Nishio · PROFESSOR / INTELLIGENT NETWORKS AND COMPUTER SCIENCE, ELECTRICAL AND ELECTRONIC ENGINEERING, SYSTEMS INNOVATION ENGINEERING

Target Nonlinear circuits technology is lectured.

Outline Various nonlinear circuits from communication circuits such as oscillators and modulators to large scale analog circuits including neural networks are utilized in recent technology. In this course, analysis methods, design methods and simulation methods of these nonlinear circuits are lectured. Furthermore, recent development of nonlinear circuit technology is introduced and future applications are discussed. (Style: Lecture)

Style Lecture and exercise

Keyword *nonlinear circuits, neural network, chaotic circuits*

Fundamental Lecture “Advanced Circuit Theory”(0.7), “Advanced Theory of Complex System Engineering”(0.5)

Relational Lecture “Nonlinear System Design”(0.5)

Requirement Students are required to know how to analyze basic linear circuits.

Notice Course is taught in English.

Goal

1. Understanding of importance of nonlinear circuit technology.
2. Learning of technique dealing nonlinear circuit technology.

Schedule

1. Nonlinear circuits in engineering systems.
2. Oscillators.
3. Communication circuits.
4. Neural networks.
5. Chaotic circuits.
6. Ultra-high speed integrated circuits.
7. Analysis of nonlinear circuits.
8. Design of nonlinear circuits.
9. Simulation methods of nonlinear circuits.
10. Recent development of nonlinear circuits (for 2 lectures).
11. Future applications of nonlinear circuits (for 3 lectures).
12. Conclusions.
13. Final examination.

Evaluation Criteria Final examination 80% and exercise 20%.

Textbook None.

Contents <http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216847>

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

Contact

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MAIL

Note 授業を受ける際には、2時間の授業時間毎に2時間の予習と2時間の復習をしたうえで授業を受けることが、授業の理解と単位取得のために必要である。