

北陸先端科学技術大学院大学研究室教育指針
Laboratory Education Guideline

研究室教育指針は、学則第30条の3に基づき、研究指導の方法及び内容並びに修了までの研究指導の計画をあらかじめ明示するものです。

Based on the Article 30-3 of the general academic rules, the Laboratory Education Guideline is intended to clearly outline the methods and content of research guidance, as well as the plan for research guidance until completion.

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1. 研究テーマ / Research Theme

We study the fundamentals of information transmission and storage. The field of information theory investigates the fundamental limits of reliable communication, while coding theory deals with practical codes and algorithms that can approach these limits. The main topic is error-correcting codes, which enable reliable data transmission over noisy communication channels as well as reliable storage in systems such as flash memory and large-scale data centers. Topics including polar codes, LDPC codes, lattice codes, decoding algorithms, channel quantization, and coding techniques for modern wireless networks and storage devices are investigated.

2. 修得が期待される能力 / Competencies expected to be acquired

研究室教育は必修 A 科目（先端）又は研究支援科目（融合）の一部として単位化されており、この欄はそれら科目のシラバス上の達成目標の一部となります。

Laboratory Education is accredited as a part of the Required courses A (Division of Advanced Science and Technology) or Research Support Courses (Division of Transdisciplinary Sciences), and this section constitutes a part of the course goals stated in the syllabus for such subjects.

Graduating students will have knowledge of fundamental methods for understanding and designing state-of-the-art communication and data storage systems. Students will also learn how to apply mathematical techniques to solve practical engineering problems in such systems, developing the ability to connect theoretical analysis with real system design. These systems are implemented as algorithms, and so students will gain understanding of mathematical techniques underlying these algorithms. Students will be able to read a paper, understand the contents, implement the algorithm in a program, and evaluate by computer simulations. Most students study and gain deep knowledge of error-correcting codes for reliable communications.

3. 研究指導方針 / Research Guiding Principle

Our lab is a dynamic and interactive environment. Students are primarily advised in one-on-one meetings between the advisor and student. More senior students are encouraged to participate in the advising of newer students. Conversely, even Masters students are given research projects that can lead to presentations at international conferences and publications in English-language journals.

4. 研究室活動の内容及び方法 / Content and Methods of Laboratory Activities

日次活動 / Daily Activities :

週次活動 / Weekly Activities : Individual meetings (1 times per week),

月次活動 / Monthly Activities : About two group meetings per month

不定期活動 / Occasional Activities : Conference presentations

5. 年間スケジュール / Annual Schedule

本学の全学共通の年間スケジュールは「履修案内」の「学位取得に至るスケジュール」を参照してください。(本学HP 参照：ホーム>教育>履修関係>履修案内)

Please refer to the “Degree conferment schedule for the master’s program/doctoral program” in the “Degree Completion Guide” for university-wide common schedule (JAIST website: Home >Education>Taking Courses>Degree Completion Guide)

Students whose research is sufficiently advanced may present at the International Symposium on Information Theory (June) or the domestic symposium Symposium on Information Theory and Its Applications (November).