

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
Development of next-generation physiological techniques to investigate the fundamental principles underlying neural circuit function.
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.
Scientific Foundations Life science has uncovered many of the molecular mechanisms that govern biological systems. Yet vast regions of biology remain unexplored. This program examines both what is known and what remains unknown, providing a framework for understanding the frontiers of modern biological research. Experimental Approaches Students gain experience with a diverse set of research methods, including molecular biology, biophysics, electrophysiology, and microfabrication. Through hands-on work and conceptual training, participants learn how to design experiments and apply advanced techniques to address fundamental biological questions. Research Mindset Many breakthroughs occur when new technologies open access to previously inaccessible domains. This program encourages creativity, persistence, and iterative experimentation in the development of new tools for discovery. The skills cultivated through this process are valuable not only in academia but also in driving innovation in society and industry.
3. 研究指導方針 / Research Guiding Principle
Our laboratory develops physiological techniques to investigate the fundamental principles underlying neural circuit functiogenesis. We believe that research should be both intellectually free and experimentally rigorous. We emphasize careful experimentation, critical thinking, and clear scientific communication through regular presentations, journal discussions, and shared reading. Our goal is to cultivate curiosity, creativity, and perseverance—the qualities that enable meaningful scientific discovery.
4. 研究室活動の内容及び方法 / Content and Methods of Laboratory Activities
<input type="checkbox"/> 日次活動 / Daily Activities : Our lab uses online tools to facilitate seamless communication, allowing members to share and discuss new findings, research challenges, and the latest developments in related fields as they arise during research. <input type="checkbox"/> 週次活動 / Weekly Activities : Individual meetings (once per week) <input type="checkbox"/> 月次活動 / Monthly Activities : Journal club and research presentations (once per month each) <input type="checkbox"/> 不定期活動 / Occasional Activities : Conference presentations are encouraged for second-year master's students at major academic meetings such as the Biophysical Society of Japan, the Japan Society of Applied Physics, and the

Physiological Society of Japan. Optional internships at external universities, research institutes, or companies.

#### 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)

After laboratory assignment, new students receive structured training designed to develop fundamental experimental and measurement skills. The content of the training is flexibly tailored to each student’s interests, prior research experience, and anticipated research topic. Training typically includes techniques such as electrophysiological recording, DNA manipulation, cell culture, laser microscopy, and microfabrication (April–July).

During this period, students also engage in regular discussions with the supervising faculty member to refine and define their research topics. From July onward, students begin their individual research projects under supervision. Emphasis is placed on developing the ability to think independently and to address research challenges through iterative experimentation and critical analysis.

Master’s students are expected to present their research results at a major academic conference in the following year, such as the Biophysical Society of Japan, the Physiological Society of Japan, or the Japan Society of Applied Physics. Doctoral students are further expected to prepare and submit research articles as first authors to peer-reviewed scientific journals and to develop the skills necessary for communicating research findings through the publication process.