

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 |
| Theoretical Computer Science, Mathematical Logic, Formal Verification, Quantum Computation |
| 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. |
| Our laboratory aims to cultivate the ability to solve societal problems based on sound logical and mathematical reasoning. Such abilities are versatile and highly applicable skills, particularly necessary for careers requiring advanced specialized knowledge. Our laboratory uses programming and specification description as its key subjects. Through research activities in our laboratory, we expect students to not only be able to perform programming and specification writing as users, but also to mathematically formalize the principles of behavior and functions, and rigorously prove their properties. |
| 3. 研究指導方針 / Research Guiding Principle |
| This laboratory provides instruction in mathematical theories motivated by solving problems in computer science. Therefore, students are expected to have acquired knowledge of native set theory (relations, functions, families, equivalence classes, strings, etc.) prior to enrollment and to be able to prove its some simple theorems without referring to anything. Specifically, this laboratory requires an understanding of material roughly equivalent to Chapter 1 of Introduction to Sets and Topology (Kazuo Matsusaka, Iwanami Shoten). Furthermore, students aspiring to enter the doctoral program must acquire a minimum level of English proficiency sufficient to participate in research discussions without difficulty by the time of admission. Basically, completing the doctoral program requires the ability to write a thesis in English and present at international conferences abroad. Simply following the advisor's guidance blindly will not cultivate outstanding talent capable of surpassing the advisor's own understanding or abilities. Therefore, rather than accepting the advisor's guidance uncritically, students are expected to treat it as a reference, utilize its strengths, and proactively propose improvements to its weaknesses. |
| 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 :
- 月次活動 / Monthly Activities :
- 年次活動 / Annual Activities : As a general rule, students present posters at a major domestic academic conference held once a year. They also participate in an annual research retreat where they discuss their work with faculty and students from multiple other universities (participation is optional).
- 不定期活動 / Occasional Activities : Progress will be individually checked either in person (when on campus) or via email (when off campus) at any time, and the next steps to take will be proposed based on the situation. Because I place a high value on student initiative, I also encourage students to proactively propose the next actions themselves. Feedback will always be provided on progress reports, and adjustments may be suggested when necessary. If progress is unsatisfactory, I will work together to identify the causes and discuss improvement strategies. Additionally, I welcome consultations regarding student life, course registration, job hunting, and future plans.

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)

- Aim to complete all lecture-related credits by the end of the first year.
- Determine aptitude for either mathematics or functional programming by the end of the first year. Utilize lectures and textbook reading groups for this purpose. Also, finalize the research plan for the following year using the more suitable field by the end of the first year.
- Develop a core research idea that is realistically feasible within the remaining timeframe by the mid-year presentation in the following academic year.
- Complete the first draft of the master's thesis by the end of December in the following academic year. Subsequently, complete the master's thesis by the end of January.
- Basically, present a poster at a major domestic academic conference held around the end of each academic year.