

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.

氏名 / name : NAGAO Yuki 役職 / official position : Professor

1. 研究テーマ / Research Theme	Our laboratory focuses on the development of advanced materials for future energy technologies and on elucidating interfacial and ion-transport phenomena. Research targets include proton-, hydroxide-, and metal-ion conducting polymers, inorganic materials, and organic-inorganic hybrids. Applications cover fuel cells, water electrolyzers, CO ₂ electrolysis, proton batteries, lithium-ion batteries, zinc-based batteries, flow batteries, tactile sensors, and ion-switching materials.
2. 修得が期待される能力 / Competencies expected to be acquired	<p>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。</p> <p>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.</p> <p>Through research in materials science, polymer chemistry, electrochemistry, and interfacial science, students are expected to acquire the following competencies:</p> <p>Master's Program</p> <ol style="list-style-type: none"> 1. Problem identification and hypothesis construction 2. Experimental skills in synthesis, structural characterization, and electrochemical analysis 3. Logical interpretation and validation of experimental results 4. Communication and presentation skills, especially through participation in English seminars 5. The ability to learn continuously through iterative experimentation and reflection <p>Doctoral Program</p> <ol style="list-style-type: none"> 1. Ability to establish an original research topic based on critical literature review 2. Advanced experimental design and analytical skills 3. International dissemination through conferences and journal publications 4. Research planning, management, and leadership skills
3. 研究指導方針 / Research Guiding Principle	Our guiding principle is to foster steady and continuous growth. Although no core time is enforced, students are encouraged to work mainly between 9:00 and 17:00 to maintain a healthy balance between research and daily life. Research themes are determined through consultation with students, respecting diverse academic backgrounds. Bi-weekly English seminars (research discussion and journal club) develop logical thinking, subject expertise, and presentation skills. Research is not always easy, but we emphasize a supportive environment where consistent effort leads to reliable progress.
4. 研究室活動の内容及び方法 / Content and Methods of Laboratory Activities	<p><input type="checkbox"/> 日次活動 / Daily Activities :</p> <p>– No core time is required; however, students are encouraged to conduct research mainly between 9:00 and 17:00 to maintain a healthy and sustainable work-life balance.</p> <p>– Daily activities include experiments, measurements, data analysis, and informal research discussions as needed.</p> <p><input type="checkbox"/> 週次活動 / Weekly Activities :</p> <p>– Individual meetings may be arranged depending on research progress and student needs.</p>

– Regular communication with international members provides natural opportunities to use and improve English skills.

月次活動 / Monthly Activities :

– Bi-weekly seminars consisting of

(1) a research discussion meeting and

(2) a journal club presentation, both conducted in English.

– Additional one-on-one meetings for progress checks are scheduled as necessary.

不定期活動 / Occasional Activities :

– Laboratory seminars and technical workshops.

– Collaborative research with industry and international institutions.

– Presentations at domestic and international conferences.

– Internships, particularly recommended for first-year master's students in summer.

– Laboratory events such as welcome parties, hanami gatherings, summer retreats, and farewell events.

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)

Master’s Program

In this laboratory, coursework is prioritized from April to July, and full-scale research activities begin in August. Internships are also encouraged. Seminars are generally held every other week, but the frequency may be increased to weekly depending on the number of students and ongoing research activities. This flexible format ensures that all students receive sufficient opportunities for discussion, feedback, and presentation practice. Through these seminars, students develop fundamental research skills and communication abilities, leading to the Research Proposal (RP) presentation in December.

In the second year, students work on a secondary research theme, present at conferences, and prepare manuscripts for publication. From December to February, students write and defend their master’s thesis. Various activities such as summer camps, laboratory events, and collaborative research projects further help students strengthen their research capabilities from multiple perspectives.