

Course number	U-LAS70 10002 SE50				
Course title (and course title in English)	ILAS Seminar-E2 :Experiential short training course in basic life sciences using marine organism (天然海洋生物を用いた基礎生命科学の体験型短期研修コース) ILAS Seminar-E2 :Experiential short training course in basic life sciences using marine organism	Instructor's name, job title, and department of affiliation	Graduate School of Pharmaceutical Sciences Program-Specific Associate Professor, Martin Robert Graduate School of Pharmaceutical Sciences Professor, KATO HIROAKI		
Group	Seminars in Liberal Arts and Sciences	Number of credits	2	Hours	30
Class style	seminar (Face-to-face course)	Year/semesters	2024・ Intensive, First semester	Quota (Freshman)	12 (10)
Target year	Mainly 1st year students	Eligible students	For all majors	Days and periods	Intensive TBD
Classroom	Research Center for Marine Biology (RCMB) Tohoku University			Language of instruction	English
Keyword	biology / science / experience / marine biology / international				
[Overview and purpose of the course]					
<p>Summary: A six-day intensive (August 26-31, 2024) and interactive camp-like scientific experience held at the Research Center for Marine Biology of Tohoku University in Asamushi (Aomori prefecture). The contents include multidisciplinary basic sciences including marine organism-based basic biology, cell biology, and physiology with related essential pharmacology concepts.</p> <p>Understanding and practicing the scientific method, based on observation and experimentation, is important for any student in science and beyond. Using simple and easily accessible experimental models such as marine organism that can be directly collected from the natural environment offers a unique opportunity to develop skills toward that objective. Moreover, small group work in an international setting adds another layer for students to develop skills in collaboration and exchange which are other important aspects of science.</p> <p>Students will learn the basis of scientific experimentation using small marine animals as an experimental model. Using seashells (貝) and sea roaches (フナムシ), students will study their basic behavioral physiology (行動生理学). Participants also have the chance to see the amazing process of sea urchin fertilization and early development (ウニの受精と発生) as well as collect plankton and observe its diversity (プランクトンの多様性). These are fundamental examples of approaches in life science research and in the study of living processes. Students can also investigate the effects of sea water ionic composition and osmotic pressure on the extrusion behavior of seashells and their importance in muscle contraction (イオン・浸透圧に基づく基礎生理学). Ion-mediated signaling pathways are common pharmacological targets and students can learn about some of these processes during the experiments. Overall, participants will learn basic principles of physiology and the scientific method, in a beautiful natural setting.</p> <p>The course will be held entirely in English in collaboration with instructors of the Graduate School of Life Sciences, Tohoku University. In addition to students at Tohoku University and Kyoto University, the course will also be opened to participants from the University of Tokyo and the University of Tsukuba. Thus, participants will enjoy an interdisciplinary and international experience in which students from many academic</p>					
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backgrounds and institutions learn together, interact, and exchange.

[Course objectives]

The main objective of the course is to learn the basics of the scientific method by performing simple ecology and cell biology experiments with marine organisms, in small groups.

Based on their own ideas, students will freely design and perform experiments to test their own hypotheses, collect data, analyze their results, and interpret them.

Students will learn through a trial-and-error process and develop problem solving skills.

Participants will develop skills in collaborative group work and in expressing themselves effectively in an international setting where students from different origins and academic backgrounds interact.

[Course schedule and contents]

After receiving basic guidance and explanations, groups will be formed and students will collect marine organisms, plan, develop, and perform various experiments together.

Discussion and sharing of ideas/results and their interpretation will be encouraged and is an important activity. On the 5th day students will present in groups their main findings in the form of a short oral presentation and will be invited to evaluate the performance of other groups. Finally, students will prepare a report about their learning experience.

All activities including presentation and report are to be done in English.

Schedule (August 26-31, 2024)

Day 1

Getting to Asamushi, Aomori prefecture
Arrival at the Asamushi Research Center for Marine Biology
Orientation and course introduction. Welcome event.

Days 2-5

Main experimental program: field and laboratory work
Exploring seashell extrusion behavior or the walking behavior of sea roaches
Fertilization and early development of the sea urchin embryo
Off-shore activity or plankton collection, observation, and classification

Day 5 afternoon

Group presentations and closing social event

Day 6

Program wrap up
Checkout
Optional visit to the Asamushi aquarium
Return to Kyoto

[Course requirements]

None

[Evaluation methods and policy]

Attendance, active participation, and group presentation/evaluation (60%)

Individual report (40%)

The presentation and report will be assessed on the basis of the course objectives and specific criteria provided during the course.

[Textbooks]

Instructed during class

No textbook is required for this course. Handouts and other materials will be distributed to course participants.

[References, etc.]

(References, etc.)

Resources will be introduced during course.

Please see the course web site below for more information.

(Related URL)

<https://sites.google.com/kyoto-u.ac.jp/ebmbp2023/home>(Course web site (2023))

<https://drive.google.com/file/d/1hdthpPbR1wdOMjGELiVaLBmXHXESfapp/view?usp=sharing>(Introductory video to the course and content (2022 edition))

[Study outside of class (preparation and review)]

No special preparation or background required.

All field activities, experiments, and the final presentation will be completed during the six-day course duration. A report will be due within about one week from the end of the course.

[Other information (office hours, etc.)]

An orientation period will be held in early June 2024. All registered participants should attend then.

Important things to know:

Instructors

In addition to Prof. Martin Robert from Kyoto University, other instructors will include Professors Ben Harvey from University of Tsukuba, Yasuyuki Matsuda from the University of Tokyo, Ian Gleadall from Tohoku University, and Aiko Iwasaki and Gaku Kumano from the Asamushi Research Center for Marine Biology, Tohoku University.

Logistics

The course will be held at the Asamushi Research Center for Marine Biology, in Aomori prefecture, for six consecutive days (August 26-31, 2024). Students must therefore be available for the duration of the whole program (five nights and six days).

The course and accommodation are free. Participants will be accommodated in a dormitory-style shared room

with multiple bunked beds and need only to pay the bed sheets cleaning fee of 600円 at the end of their stay. On-site daily meals will be served (lunch and dinner) for a total of about 6,300円 for the whole course. Special diets (Halal, vegetarian, etc.) can be accommodated when requested in advance.

Because of the nature of the course, all participating students need to enroll in the Personal Accident Insurance plan following Kyoto University's policy.

Travel expenses

Participants will have to cover their travel expenses to Aomori. Because of the remote location, travel costs can be significant. Participants are invited to look for cheap means of transportation including local trains (青春18きっぷ) or highway buses. Combinations of local train lines and/or LCC carriers offering discount fares may provide reasonable alternatives and interested participants are invited to search on their own. Otherwise the regular (non-discounted) two-way fares between Kyoto and Aomori varies between about 32,200円 for a long highway bus journey to 54,000円 for the Shinkansen. Airfares for a direct flight from Osaka (Itami) to Aomori are highly variable (from very affordable to expensive depending on flight dates and period of booking).

Target audience

The course is developed for all first-year undergraduate students regardless of their academic program (humanities, economics, medicine, agriculture, science, or engineering, etc.). However, we also welcome more advanced students regardless of their academic year (B2-B4), especially full-degree and exchange international students (KUINEP program or other). The course emphasizes small group activities to promote interactions and discussion between international and Japanese students from different Japanese universities.

We welcome students interested in a unique international and interactive scientific camp-like experience on the beautiful seashore of Aomori prefecture.

Because this is an intensive course that will be held late August, students grade will be released later than for regular courses. Expect the announcement to be made about 1-2 weeks after course completion.

For additional information please contact: robert.martin.4m@kyoto-u.ac.jp