

科目ナンバリング		U-LAS70 10002 SE50						
授業科目名 <英訳>	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			担当者所属 職名・氏名	薬学研究科 特定准教授 Martin Robert 薬学研究科 教授 加藤 博章			
群	少人数群	単位数	2単位	時間数	30時間	授業形態	ゼミナール(対面授業科目)	
開講年度・ 開講期	2024・ 前期集中	受講定員 (1回生定員)	12 (10) 人	配当学年	主として1回生	対象学生	全学向	
曜時限	集中 集中	教室	東北大学			使用言語	英語	
キーワード	biology / science / experience / marine biology / international							
【授業の概要・目的】								
<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 backgrounds and institutions learn together, interact, and exchange.</p>								
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## 【到達目標】

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.

## 【授業計画と内容】

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

## 【履修要件】

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## 【成績評価の方法・観点】

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.

## 【教科書】

授業中に指示する

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

## 【参考書等】

( 参考書 )

Resources will be introduced during course.

Please see the course web site below for more information.

( 関連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))

## 【授業外学修（予習・復習）等】

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.

## 【その他（オフィスアワー等）】

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