Tokyo Metropolitan University

Undergraduate Course of Biological Sciences

Full undergraduate biology program taught entirely in English for April 2018 Admission
Introduction

from April 2015
Full undergraduate curriculum taught entirely in English

TMU Biological Sciences Department offers a full undergraduate biology course taught entirely in English started from April 2015. You do not have to be able to speak or write Japanese to complete this course. All the lectures and seminars are provided in both English and Japanese. Credits obtained by taking lectures provided in Japanese can also be used to fulfill requirements for graduation.

Biology courses include taxonomy, ecology, physiology, genetics, developmental biology, cell biology, molecular biology, and biochemistry. The subjects of these lectures include organisms ranging from microorganisms, plants and animals. A variety of humanities courses are also provided in English.

Unique courses are provided to promote creative thinking. Students are also encouraged to participate in undergraduate research programs in their freshman and sophomore years. This program allows the students to gain first-hand experience in biological research of their own choice on their own initiative.

Becoming a Better Researcher!

In our department, we aim to study a wide range of fields of basic biology. Advances in these fields are extremely rapid and results from the fields quickly make way into practical application in medical sciences, agriculture and environmental sciences. Under this circumstance, call for personnel with firm understanding of basic science and excellent research capability is higher than ever. Application of the results from basic science requires a wide range of knowledge, good experimental technique and an innovation mindset. In order to nurture these abilities, we have designed our curriculum to cover a wide range of life forms, from microbes to plants and animals. With our curriculum, each student will study these life forms from the molecular to cellular/individual level, and also the environment and the ecosystems they inhabit. We aim to nurture independent thinking through Independent Research program and also emphasize the importance of communicative skills.

Department Chair:
Prof. Jun-ichi Kato
A View of Our Classroom

Laboratory Course in General Biology
Introductory courses designed to help you choose your research field.

Field Practice of Plant Taxonomy
Experience field work with professional researchers.

Independent Research Course in Biology
Let’s turn your questions into valid scientific research.

Come to Study with Us

After Graduation

After Finishing Undergraduate School
On average, 70% ~ 90% of our alumni proceed to a master’s degree. Other students find employment in public and private sectors. The following is an excerpt from the list of career path of our alumni.

- Private sectors
  Food and Beverage Industry, Biochemical and Pharmaceutical Industry, Manufacturing Industry, and Learning Support Organizations

- Public Sectors
  Ministry of Environment, Forestry Agency

After Finishing Master’s Program
After obtaining a master’s degree, many students proceed to the doctoral program while others find employment. Many students stay in our department for their Ph.D degree, while other students join Ph.D programs in other universities such as The University of Tokyo and University of Lausanne.

Career paths of International students
Some of our previous international student alumni returned to their own countries and have found positions in local universities. Other students have remained in Japan and started their own venture companies. With our new English course, we expect that career paths of our international students’ alumni will broaden. Studying biology in English should increase chances for the alumni to find Biology-related jobs in multinational organizations and public sectors.
Features of Our Curriculum

Our curriculum is highly experience-oriented, so almost half of our program is allocated to experiments and practical training inside and outside the laboratory.

Through the curriculum, we aim to nurture “Skills and knowledge for studying nature”, which is highly beneficial even when applied to activities outside research. Practical training and research in marine spots and fields are also conducted mainly during the summer.

Interactive Education in a Small Class

The size of the English course class will be 8-10 students each year.
We will take advantage of the small class size and will conduct our lecture in an interactive manner.

Advantages of a Cross-Cultural Classroom

Studying in our classroom will be a cross-cultural experience.
We have learned from experience that studying with your peers who have different views, ideas and opinions is the best way to study any subject matter.
Our professors will assist students of both languages to overcome the lingual difficulties and cultural differences.

What We Look For

- Applicants who are very interested in biology and aspire to gain a profound knowledge of living organisms.
- Applicants who are very interested in experiments, observations, and research.
- Applicants who have mastered the basics of English, chemistry, physics, and mathematics.

Independent Research for freshman program, which starts in the first year, most strongly reflects the special features of our curriculum. Unlike the Graduate Research in the senior year, the topic of research is not limited to topics studied in your professors’ lab.

Students learn how to turn their own ideas and interest into a valid research question. Students learn to organize research groups, plan how the research should be carried out, conduct the actual research and present their achievements, with assistance of academic advisors.

Through this program, we encourage students to gain first-hand experience in biological research and to learn the fundamental skills required to study and understand natural organisms.

Studying in English (or in Both Languages)

Students can take all 124 credits required for graduation in English. This includes the coursework necessary for graduation.

All seminars and lectures are provided in both English and Japanese. The choice of language can be based on the students’ interest and language skill. Students can switch from one language to another from a new semester.
Syllabus & Course

The following is an example of the lectures and seminars that will be provided in English. A variety of humanities courses will also be provided in English and can be included in the 124 credits required for graduation.

Model Curriculum

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic subjects:</strong> Freshman seminar / Information Literacy / English</td>
<td></td>
</tr>
<tr>
<td><strong>General Subjects:</strong> Human Biology and other biological subjects, Japanese Language and other humanity subjects</td>
<td></td>
</tr>
<tr>
<td>Laboratory Course in Elementary Biology</td>
<td>Laboratory Course in General Biology</td>
</tr>
<tr>
<td>General Biology / General Taxonomy / General Physiology / General Genetics / General Biochemistry</td>
<td>General Developmental Biology / General Ecology / Genetics / Cell Biology / Biochemistry / Neuroscience / Evolutionary Biology / Developmental Biology / Special lecture in Biology</td>
</tr>
<tr>
<td>Independent Research Course in Biology</td>
<td>Independent Research Course in Biology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry / Molecular Biology / Cell Biology / Genome Science / Biodiversity / Special Lecture in Biology</td>
<td></td>
</tr>
<tr>
<td>Laboratory Course in Taxonomy / Laboratory Course in Evolutionary Biology / Laboratory Course in Genetics / Laboratory Course in Molecular Biology / Laboratory Course in Physiology / Laboratory Course in Neuroscience / Laboratory Course in Biochemistry / Laboratory Course in Cell Biology / Laboratory Course in Developmental Biology / Laboratory Course in Ecology</td>
<td></td>
</tr>
<tr>
<td>Field Practice of Plant Taxonomy / Field Practice of Animal Taxonomy / Field Work in Ecology / Marine Biology Course (General Biology) / Marine Biology Course (Physiology &amp; Developmental Biology) / Internship in Biology</td>
<td></td>
</tr>
<tr>
<td>Graduate Research in Biology</td>
<td></td>
</tr>
<tr>
<td>Special lecture in Biology / Laboratory Course for Radio Isotope in Biology</td>
<td></td>
</tr>
</tbody>
</table>

Syllabus Example

[Table and text regarding syllabus example]
New Professors

Prof. Takeshi Kanegae
1996-2001
Graduate school of the University of Tokyo,
Pharmaceutical Sciences
2001-2006
Postdoctoral fellow at Cold Spring Harbor Laboratory
2006-2014
Assistant Professor at Thomas Jefferson University

Are you amazed by the beauty of living creatures and eager to understand them? TMU biological science course provides you the instruction, research experience, and mentoring to help your expedition to discover how life works. Come on board with us to a fascinating journey into biology!
My research goals are to understand the molecular basis of brain functions and to provide fundamental insights into eventual cures for neurological diseases.

Characteristics of Our Teaching Staff

Our teaching staffs are highly experienced in teaching and conducting research in English. Many have studied and/or worked in non-Japanese laboratories. Therefore, we are fully capable of providing our course in both Japanese and English.
We have also enlarged our staff. A native English-speaking staff and a Japanese staff who has a long experience teaching biology in United States have joined our department in 2014.

Professors & Research Fields

Toshiro Aigaki  Genetics, Molecular Biology, Genome Science
Takashi Okamoto  Plant Developmental Biology, Molecular Cell Biology of Plants
Naoki Kachi  Plant Ecology, Preservation Ecology, Island Ecosystem
Junichi Kato  Molecular Genetics, Bacterial Genome, Bacterial Cell-growth
Akeo Kadota  Plant Physiology, Plant Photosresponse, Cytoskeleton
Hiroyuki Kawahara  Cell Biology, Biochemistry, Cell Growth and Differentiation
Koichiro Tamura  Evolutionary Genetics, Genome Science, Bioinformatics
Fumio Hayashi  Animal Ecology, Animal Behavior, Evolutionary Ecology
Shinichi Hisanaga  Neurobiochemistry, Cell Biology, Signal Transduction
Katsumi Matsuura  Environmental Microbiology, Microbial Ecology, Photosynthesis
Noriaki Murakami  Plant Systematics, Evolutionary Biology, Plant Speciation
Katsuyuki Eguchi  Animal Taxonomy, Taxonomy of Ants, Biogeography

Shigeki Ehira  Molecular Genetics, Molecular Physiology, Microbial Genome Science
Yoko Kakugawa  Plant Systematics, Evolutionary Biology, Plant Speciation
Takeshi Kanegae  Molecular Cell Biology of Plants, Response to Light Environment
Makoto Kurokawa  Neurobiology, Nervous Control of Behavior
Takaomi Sakai  Neurogenetics, Molecular Genetics of Learning and Memory
Takashi Sugawara  Plant Systematics, Ecology of Flowers
Aya Takahashi  Evolutionary Genetics, Speciation, Population Genetics
Shin Haruta  Environmental Microbiology, Microbial Ecosystem, Applied Microbiology
Kimiko Fukuda
Admission & Tuition

For details contact: [Contact Information] by E-mail: [E-mail Address]
Outline of The Course

TMU Biological Sciences Department offers a full undergraduate biology course taught entirely in English started from April 2015. You do not have to be able to speak or write Japanese to complete this course. All the lectures and seminars are provided in both English and Japanese. Credits obtained in Japanese curriculum can also be used to fulfill requirements for graduation.

Contact Information

Minami-Osawa 1-1 Hachioji, Tokyo 192-0397
http://www.biol.se.tmu.ac.jp/global/

Date of issue