# Application Guidelines for Admission Examination to the Doctoral Program Starting in October 2024 and April 2025

## Special Selection for Foreign Students

2024

Graduate School of Bioresources, Mie University

## 1. Number of students to be enrolled

| Major | Course | Laboratories | Number of students |
|---|---|---|---|
| Sustainable Resource Sciences | Sustainable Resource System Sciences | Food Production Science<br>Forest Resources and Environmental Science* | A Few |
| | International Sustainable Resource Science | International Sustainable Resource Science | |
| Environmental Science and Technology | Atmosphere and Sustainable Earth | Atmosphere Ocean and Earth System,<br>Adaptive Watershed Management,<br>Earth System Analysis | A Few |
| | Environmental and Agricultural Engineering | Environment Oriented Information and System Engineering,<br>Regional Conservation Engineering,<br>Environmental and Ecosystem Science | |
| Life Sciences | Applied Biological Chemistry | Biochemistry and Biotechnology*,<br>Marine Life Science and Molecular Chemistry | A Few |
| | Marine Biological Science | Marine Biology* | |

*Including Cooperative Research Institutes

**Note) Before making an application, please make sure to contact your planned supervising teacher or a supervising teacher of the field of education and research you are applying for in advance.**

## 2. Schedule for the admission examination

【Starting in October2024】

| | Application Period | Examination Date | Result Announcement Date |
|---|---|---|---|
| Schedule | July 8 (Mon.), 2024 to July 12 (Fri.), 2024 (It should be reached no later than July 12 by the postal mail) | August 21 (Wed.), 2024 (Occasional date: August 22 (Thu.),2024) | September 13 (Fri.), 2024 |
| Notes | Acceptance Hours: 9:00 a.m. to 5:00 p.m. (Applications via mail must arrive within the above period) | On the day of the entrance examination, make sure to bring your Ticket for Exam and enter the examination venue. | The examinees numbers of successful examinees will be posted in the entrance hall of the Graduate School of Bioresources around 10:00 a.m., and those who have passed will also be notified via mail.<br><br>After results are announced, the examinees numbers of successful examinees will be posted on the website of Graduate School of Bioresources (http://www.bio.mie-u.ac.jp/).<br><br>We will not respond to any inquiries via phone, etc. concerning the results. |

## 【Starting in April2025】

| | Application Period | Examination Date | Result Announcement Date |
|---|---|---|---|
| First Recruitment | July 8 (Mon.), 2024 to July 12 (Fri.), 2024<br><br>(It should be reached no later than July 12 by the postal mail) | August 21 (Wed.), 2024<br><br>(Occasional date: August 22 (Thu.), 2024) | September 13 (Fri.), 2024 |
| Second Recruitment | December 9 (Mon.), 2024 to December 13(Fri.), 2024<br><br>(It should be reached no later than December 13 by the postal mail) | January 21 (Tue.), 2025<br><br>(Occasional date: January 22 (Wed.), 2025) | February 14 (Fri.), 2025 |
| Notes | Acceptance Hours:<br>9:00 a.m. to 5:00 p.m.<br>(Applications via mail must arrive within the above period) | On the day of the entrance examination, make sure to bring your Ticket for Exam and enter the examination venue. | The examinees numbers of successful examinees will be posted in the entrance hall of the Graduate School of Bioresources around 10:00 a.m., and those who have passed will also be notified via mail.<br><br>After results are announced, the examinees numbers of successful examinees will be posted on the website of Graduate School of Bioresources (http://www.bio.mie-u.ac.jp/).<br><br>We will not respond to any inquiries via phone, etc. concerning the results. |

## 3. Selection Method

Students are selected for admission based on the comprehensive screening of academic achievement tests, application materials, and oral examination results.

【Starting in October2024】

General Selection

| Subjects, etc. | Hours | Remarks |
|---|---|---|
| Foreign Language (English) (Submission of TOEIC® score) | 10:00 a.m.-10:10 a.m. | We collect the original TOEIC® score sheet in an examination room. (We will return it to you on the same day.) |
| Written Examination Specialized Courses | 10:30 a.m.-12:30 p.m. | Subjects that are fundamental to your chosen course of study |
| Oral Examination | Starts at 2:00 p.m. | Screening will be done based on master's thesis or research progress reports, research plans, etc. |

Applicants who fall under one of the categories that are listed below and have completed the Master's program at this graduate school with the intention of continuing on to the Doctoral program may be exempted from the written examination. Also, such applicants may resubmit the TOEIC® score that they submitted for the entrance exam for admittance to the Master's program. However, applicants who are enrolled in the Master's program at this graduate school by special selection of foreign students are exempted from the foreign language and written examination.

A. Applicants who, after completing the Master's program, wish to continue on in the same academic field as their supervising teacher

B. Applicants other than A. who are recognized by their intended major

Special Selection for Foreign Students

| Subjects | Hours | Remarks |
|---|---|---|
| Foreign Language (Japanese or English) | 10:30 a.m.-12:00 p.m. | Students may bring one (1) language dictionary. (Electronic dictionaries are not permitted.) For more details, please refer to "7. Notes" on page 13. |
| Oral Examination | Starts at 1:00 p.m. | Screening will be done based on fundamental specialized academic abilities, master's thesis or research progress reports, research plans, etc. |

Applicants who fall under one of the categories that are listed below and have completed the Master's program at this graduate school with the intention of continuing on to the Doctoral program should take General Selection. In this case, some exam subjects are exempt.

A. Applicants who, after completing the Master's program, wish to continue on in the same academic field as their supervising teacher

B. Applicants other than A. who are recognized by their intended major

【Starting in April2025】

General Selection

| Subjects, etc. | Hours | Remarks |
|---|---|---|
| Foreign Language (English) (Submission of TOEIC□score) | 10:00 a.m.-10:10 a.m. | We collect the original TOEIC□ score sheet in an examination room. (We will return it to you on the same day.) |
| Written Examination. Specialized Courses | 10:30 a.m.-12:30 p.m. | Subjects that are fundamental to your chosen course of study |
| Oral Examination | Starts at 2:00 p.m. | Screening will be done based on master's thesis or research progress reports, research plans, etc. |

Applicants who fall under one of the categories that are listed below and have completed the Master's program at this graduate school with the intention of continuing on to the Doctoral program may be exempted from the written examination. Also, such applicants may resubmit the TOEIC□ score that they submitted for the entrance exam for admittance to the Master's program. However, applicants who are enrolled in the Master's program at this graduate school by special selection of foreign students are exempted from the foreign language and written examination.

A. Applicants who, after completing the Master's program, wish to continue on in the same academic field as their supervising teacher

B. Applicants other than A. who are recognized by their intended major

Note that A. and B. applicants will be excluded from the first recruitment round and selected during the second recruitment round only.

Special Selection for Foreign Students

| Subjects | Hours | Remarks |
|---|---|---|
| Foreign Language (Japanese or English) | 10:30 a.m.-12:00 p.m. | Students may bring one (1) language dictionary. (Electronic dictionaries are not permitted.) For more details, please refer to "7. Notes" on page 13. |
| Oral Examination | Starts at 1:00 p.m. | Screening will be done based on fundamental specialized academic abilities, master's thesis or research progress reports, research plans, etc. |

Applicants who fall under one of the categories that are listed below and have completed the Master's program at this graduate school with the intention of continuing on to the Doctoral program should take General Selection. In this case, some exam subjects are exempt.

A. Applicants who, after completing the Master's program, wish to continue on in the same academic field as their supervising teacher

B. Applicants other than A. who are recognized by their intended major

## 4. Applicant Eligibility

【Starting in October 2024】

[Special Selection for Foreign Students]

Non-Japanese nationals who possess the Japanese-language ability that is required for taking courses may apply, providing that one of the following requirements is met:

(1) Applicant has been or expects to be awarded either a master's degree or a degree that is equivalent to a professional degree from a non-Japanese university by September 30, 2024.

(2) Applicant has completed or expects to complete a foreign school's distance-learning course in Japan and has received or expects to receive a master's degree or a degree that is equivalent to a professional degree by September 30, 2024.

(3) Applicant has been awarded a master's degree or expects to be awarded a master's degree or a degree that is equivalent to a professional degree in Japan by September 30, 2024.

(4) Applicant has completed or expects to complete a foreign university program in Japan that has been specified by Japan's minister of education, culture, sports, science, and technology. The program must have been offered by an educational facility that is operated as part of the foreign country in question's educational system, and the applicant must have been awarded or must expect to be awarded a master's degree or a degree that is equivalent to a professional degree by September 30, 2024.

(5) Applicant has completed a course of study at the United Nations University, which was established based on the United Nations General Assembly resolution dated December 11, 1972 by means of the Act on Special Measures Incidental to Enforcement of the Agreement between the United Nations and Japan regarding the Headquarters of the United Nations University (Law 72, 1976) in conjunction with the agreement between the United Nations and Japan regarding the United Nations University's headquarters (hereinafter called "United Nations University"). The applicant must have been granted a degree that is equivalent to a master's degree.

(6) Applicant has completed an educational program at a foreign school, a designated academic institution as described in Item 4 above, or the United Nations University. The applicant must have passed an examination or screening process that is equivalent to those set forth in Article 16-2 of the Standards for the Establishment of Graduate. Furthermore, the applicant must have been recognized as having academic ability that is at least equivalent to that of a master's degree holders'.

(7) Other persons who are deemed eligible by Japan's minister of education, culture, sports, science, and technology may apply (see September 1, 1989 Notification no. 118, Ministry of Education, Science and Culture).

Applicants who have graduated from university or completed a 16-year course of study either in a country other than Japan or through a distance education program that was offered by a university outside of Japan and have subsequently engaged in research at a university or research institute, etc., for at least two years as of September 30, 2024 may apply if, based on their achievements at any such institution, they have been recognized as possessing academic ability that is at least equivalent to that of a master's or professional degree holders'.

(8) Applicant must be aged 24 or older by September 30, 2024 and must be recognized, through this school's admissions eligibility screening, as possessing academic ability that is at least equal to that of a master's or professional degree holders'.

【Starting in April 2025】

[Special Selection for Foreign Students]

Non-Japanese nationals who possess the Japanese-language ability that is required for taking courses may apply, providing that one of the following requirements is met:

(1) Applicant has been or expects to be awarded either a master's degree or a degree that is equivalent to a professional degree from a non-Japanese university by March 31, 2025.

(2) Applicant has completed or expects to complete a foreign school's distance-learning course in Japan and has received or expects to receive a master's degree or a degree that is equivalent to a professional degree by March 31, 2025.

(3) Applicant has been awarded a master's degree or expects to be awarded a master's degree or a degree that is equivalent to a professional degree in Japan by March 31, 2025.

(4) Applicant has completed or expects to complete a foreign university program in Japan that has been specified by Japan's minister of education, culture, sports, science, and technology. The program must have been offered by an educational facility that is operated as part of the foreign country in question's educational system, and the applicant must have been awarded or must expect to be awarded a master's degree or a degree that is equivalent to a professional degree by March 31, 2025.

(5) Applicant has completed a course of study at the United Nations University, which was established based on the United Nations General Assembly resolution dated December 11, 1972 by means of the Act on Special Measures Incidental to Enforcement of the Agreement between the United Nations and Japan regarding the Headquarters of the United Nations University (Law 72, 1976) in conjunction with the agreement between the United Nations and Japan regarding the United Nations University's headquarters (hereinafter called "United Nations University"). The applicant must have been granted a degree that is equivalent to a master's degree.

(6) Applicant has completed an educational program at a foreign school, a designated academic institution as described in Item 4 above, or the United Nations University. The applicant must have passed an examination or screening process that is equivalent to those set forth in Article 16-2 of the Standards for the Establishment of Graduate. Furthermore, the applicant must have been recognized as having academic ability that is at least equivalent to that of a master's degree holders'.

(7) Other persons who are deemed eligible by Japan's minister of education, culture, sports, science, and technology may apply (see September 1, 1989 Notification no. 118, Ministry of Education, Science and Culture).

(Applicants who have graduated from university or completed a 16-year course of study either in a country other than Japan or through a distance education program that was offered by a university outside of Japan and have subsequently engaged in research at a university or research institute, etc., for at least two years as of March 31, 2025 may apply if, based on their achievements at any such institution, they have been recognized as possessing academic ability that is at least equivalent to that of a master's or professional degree holders'.)

(8) Applicant must be aged 24 or older by March 31, 2025 and must be recognized, through this school's admissions eligibility screening, as possessing academic ability that is at least equal to that of a master's or professional degree holders'.

## 5. Application forms, etc.

[Applicant eligibility]: Special selection for Foreign Students (1) to (5)

(1) Applicants are required to submit the following documents. Please download the application forms from the website of Graduate School of Bioresources, and print them with A4 size. Documents marked with ○ must be submitted by all applicants. Not all applicants will submit documents marked with △, so please read remarks carefully.

| Application Forms | Remarks | General Selection | Special Selection for Foreign Students |
|---|---|---|---|
| Application Form | 【Designated Form】Please write the required information on the form designated by the graduate school. | ○ | ○ |
| Photo Card and Ticket for Exam | 【Designated Form】Please attach a recent photograph taken within last three months. | ○ | ○ |
| CV | 【Designated Form】Please write the required information on the designated form. (Only for Foreign Students) | △ | ○ |
| Certificate of (expected) Completion of Master's Program | Certificate of (expected) completion of Master's program.<br>***Regular students who are now studying at the Master's program at the Graduate School of Bioresources, Mie University, do not need to submit this. All others must apply.** | △ | △ |
| Academic Transcript | Academic transcript from undergraduate university or school. | ○ | ○ |
| | Academic transcript from a Master's program at a graduate school. | ○ | ○ |
| Abstract of Master's Thesis, etc. | a. Applicants who possess Master's degrees must include an abstract of their thesis in about 600 words if using English or 2,000 characters if using Japanese.<br>b. Applicants who do not have Master's degrees must describe their research progress in about 600 words if using English or 2,000 characters if using Japanese. | ○ | ○ |
| Research Performance | 【Designated Form】Use the form designated by the graduate school. | ○ | ○ |
| Documentation of Research Achievements | Applicants who have authored works, academic papers, technical reports, presentations at academic meetings, patents, etc., should attach documentation indicating those. In case of collaborative research, applicants should attach materials that clearly state the portion of research for which they can be credited. | △ | △ |

| | | | |
|---|---|---|---|
| Research Plan | Describe your (desired) doctoral research plan on the form designated by the graduate school (approximately 300 words if using English or 1,000 characters if using Japanese; drawings, charts, etc., may also be included). Please consult with your prospective supervisor when filling out this form. | ○ | ○ |
| Reference Certificate | 【Designated Form】The application should be submitted by students who will have completed the Master's program at the Graduate School of Bioresources, Mie University and then wish to continue on to the school's Doctoral course in the same academic field as their supervising teacher. (This does not apply to students who wish to enroll from other graduate departments.) | △ | - |
| Stamped Self-addressed Envelope | On the envelope sized 240×332, write your name, address, and postal code, and affix postage worth 380 yen (express letter). | ○ | ○ |
| Admission Application Fee<br>Admission Application Payment Receipt | Admission application fee: 30,000 yen **(This is not required for government- financed foreign students or students who will have completed the Master's program at Mie University's graduate school with the intention of continuing on to the Doctoral program.)**<br>【Designated Form】When making a transfer, please read 【Delivery method】and 【Notes】written on the payment slip. Affix the wire transfer confirmation form, which must bear the financial institution's seal of receipt, to the application form's "admission application payment receipt" field, and submit it along with the other application materials. | △ | ○ |
| Health Certificate | 【Designated Form】Applicants who reside outside of Japan during the application period (including Japanese nationals) and will be coming to Japan to take the examination should submit a health certificate using the format prescribed by the graduate school. Details are available via the URLs below.<br>URL (Japanese) :<br>https://www.mie-u.ac.jp/exam/health/health2/index.html<br>URL (English) : https://www.mie-u.ac.jp/exam/health/health3.html | △ | △ |
| Other | **Foreign students must submit a copy of their visa and passport** | △ | ○ |

(2) Methods for applying: Send application forms by postal mail (registered express letter) or submit them in person.

(3) Address for the submission of mailed applications: Student Affairs Section, Graduate School of Bioresources, Mie University, 1577 Kurimamachiya-cho, Tsu City 514-8507, Mie, Japan, TEL +81-59- 231-9631

[Applicant eligibility]: Special Selection for Foreign Students (6) to (8)

(1) Applicants are required to submit the following documents. Please download the application forms from the website of Graduate School of Bioresources, and print them with A4 size. Documents marked with ○ must be submitted by all applicants. Not all applicants will submit documents marked with △, so please read remarks carefully.

| Application Forms | Remarks | General selection | Special Selection for Foreign Students |
|---|---|---|---|
| Application Form | 【Designated Form】Please write the required information on the form designated by the graduate school. | ○ | ○ |
| Photo Card and Ticket for Exam | 【Designated Form】Please attach a recent photograph taken within last three months. | ○ | ○ |
| CV | 【Designated Form】Please write the required information on the designated form. (Only for Foreign Students) | △ | ○ |
| Certificate of Undergraduate Graduation | Certificate of undergraduate graduation. | ○ | ○ |
| Academic Transcript | Academic transcript from undergraduate university or school. | ○ | ○ |
| Research Performance | 【Designated Form】Use the form designated by the graduate school. | ○ | ○ |
| Documentation of Research Achievements | Applicants who have authored works, academic papers, technical reports, presentations at academic meetings, patents, etc., should attach documentation indicating those. In case of collaborative research, applicants should attach materials that clearly state the portion of research for which they can be credited. | △ | △ |
| Summary of Research Achievements | Write your study topic on line 1 and your name on line 2. Please summarize your research achievements in essay/review style, using no more than three A4 pages (approximately 1,200 words if using English or 4,000 characters if using Japanese; drawings, charts, etc., may also be included). | ○ | ○ |
| Research Plan | 【Designated Form】Describe your (desired) doctoral research plan on the form designated by the graduate school (approximately 300 words if using English or 1,000 characters if using Japanese; drawings, charts, etc., may also be included). Please consult with your prospective supervisor when filling out this form. | ○ | ○ |

| | | | |
|---|---|---|---|
| Application Form for Qualification Certificate | 【Designated Form】 | ○ | ○ |
| Stamped Self-addressed Envelope | On the envelope sized 240×332, write your name, address, and postal code, and affix postage worth 380 yen (express letter). | ○ | ○ |
| Admission Application Fee | Admission application fee: 30,000 yen **(This is not required for government- financed foreign students or students who will have completed the master's program at Mie University's graduate school with the intention of continuing on to the doctoral program.)** | △ | ○ |
| Admission Application Payment Receipt | 【Designated Form】When making a transfer, please read 【Delivery method】and 【Notes】written on the payment slip. Affix the wire transfer confirmation form, which must bear the financial institution's seal of receipt, to the application form's "admission application payment receipt" field, and submit it along with the other application materials. | | |
| Health Certificate | 【Designated Form】Applicants who reside outside of Japan during the application period (including Japanese nationals) and will be coming to Japan to take the examination should submit a health certificate using the format prescribed by the graduate school. Details are available via the URLs below.<br>URL (Japanese) :<br>https://www.mie-u.ac.jp/exam/health/health2/index.html<br>URL (English) : https://www.mie-u.ac.jp/exam/health/health3.html | △ | △ |
| Other | **Foreign students must submit a copy of their visa and passport.** | △ | ○ |

(2) Methods for applying: Send application forms by postal mail (registered express letter) or submit them in person.

(3) Address for the submission of mailed applications: Student Affairs Section, Graduate School of Bioresources, Mie University, 1577 Kurimamachiya-cho, Tsu City 514-8507, Mie, Japan, TEL+81-59 231-9631

## 6. Entrance Fee and Tuition

(1) Entrance Fee 282,000 yen

**(This is not required for government- financed foreign students or students who will have completed the Master's program at Mie University's graduate school with the intention of continuing on to the Docto ral program.)**(2) Tuition 260,400 yen per semester (520,800 yen for the whole year)

**(This is not required for government-financed foreign students)**

## 7. Notes

(1) Incomplete and/or insufficient applications will not be subject to screening.

(2) Any applicants who are found to have made false statements on the application will have their permission to enroll withdrawn, even if a positive admission decision has already been made.

(3) The ticket for exam must be brought along with you on the examination day.

If you arrive late, i.e., after the examination has started, report to the proctor and follow their instructions.

For all exams, you will be considered late if you arrive 30 minutes or more after the exam has started. In such cases, tardiness revokes eligibility for that exam and any subsequent exams.

During exams, you are permitted to have the following items on your desk; ticket for exam, black pencil, black mechanical pencil, eraser, pencil sharpener, a dedicated timekeeping device (i.e., with no other function besides timekeeping), eyeglasses, eyedrops, and tissues (which have been removed from their packaging).

You may not use mobile phones, smartphones, wearable terminals, electronic devices such as calculators, etc.

For the foreign language examination (English or Japanese) that forms part of the special selection for foreign students, applicants may bring one language dictionary; however, electronic dictionaries are not permitted.

# Outline of Departments, Courses and Research Fields

## 1. Department of Sustainable Resource Sciences

Our lifestyles, which are based on the mass production, mass consumption, and mass disposal of foods and things we use that are made from oil energy, which have expanded greatly in the second half of the twentieth century, may be convenient and comfortable, but on the other hand, they are causing severe issue with global warming and food shortages. This department is composed of the following two courses, which provide a research and education system to foster both comprehensive and applied abilities. To do this, we use a foundation of instruction in the basics, especially food production, the effective use of bioresources, and the construction of social systems. Our aim is to tackle solutions to 21st century food and environmental issues, and bring about a sustainable society.

### 1-1 Sustainable Resource System Sciences Course

As the world's population continues to increase, humanity will be required to use the planet's limited resources sustainably. Maintaining the sustainability of food production in particular will not be limited to supplying us with fresh, tasty food; it will play a major role in the conservation of the global environment and the reuse of bioresources. In addition, forests contain roughly 90% of terrestrial bioresources, so we need sustainable use of bioresources such as wood and molecular materials produced from forests, as well as the conservation of the biodiversity and habitat of the life within them. In this course, we shall examine sustainable resource system sciences, which have developed from a basis in agrobiology and forest resources and environmental science, from a range of new perspectives. We shall seek out ways to solve global food issues, sustainably use bioresources that include multiple functions of forests, and to help sustain forest ecosystems that are formed through a rich, diverse range of life.

### 1-2 International Sustainable Resource Science Course

We carry out research and education to use unique local assets appropriately in rural villages around Japan and the world, with the aim of creating sustainable socio-economic development. Specifically, we emphasize fieldwork, providing education and research in socio-economic fields with the aim of constructing a social system to achieve the sustainable use of local resources. We also carry out education and research related to practical utilization technology for regional resources targeted at developing nations in particular, on a foundation of biology.

## 1-1 Sustainable Resource System Sciences Course

| Research Fields | Research Outline | Supervisors | E-mail address |
|---|---|---|---|
| Food Production Science | We aim to develop efficient and environmentally-friendly techniques for producing safe and high-valued food, including grains, beans, fruits, vegetables, and livestock. The techniques include those for protecting crops from insect pests and diseases. Moreover, we try to discover possibly useful functions equipped in living beings at levels of genes, cells, organs, organisms, populations, communities, and ecosystems. We take various approaches based on genetics, physiology, systematics and ecology in order to accomplish the above purposes. See for themes addressed by individual supervisor candidates the Research Outlines for the Course of Animal and Plant Sciences in the Master's Program. | Professor<br>Kakeda Katsuyuki<br>Umezaki Teruhisa*1<br>Nagasuga Kiyoshi<br>Okuda Hitoshi<br>Nada Kazuyoshi<br>Matsui Hiroki<br>Nakashima Chiharu<br>Tsukada Morio<br>Associate Professor<br>Nagaya Yuichi<br>Ban Tomomi<br>Kondo Makoto<br>Shirouzu Takashi | <br>kakeda@bio.mie-u.ac.jp<br>umezaki@bio.mie-u.ac.jp<br>nkiyoshi@bio.mie-u.ac.jp<br>okudat@bio.mie-u.ac.jp<br>nada@bio.mie-u.ac.jp<br>matsui@bio.mie-u.ac.jp<br>chiharu@bio.mie-u.ac.jp<br>tsukada@bio.mie-u.ac.jp<br><br>nagaya@bio.mie-u.ac.jp<br>tomomi@bio.mie-u.ac.jp<br>makok@bio.mie-u.ac.jp<br>shirouzu@bio.mie-u.ac.jp |

＊1：Applicants who wish to enroll under this supervisor should inform the Student Affairs Section, Graduate School of Bioresources.

| Research Fields | Research Outline | Supervisors | E-mail address |
|---|---|---|---|
| Forest Resources and Environmental Science | Forests are huge biological communities that cover about 30% of the world's land area and account for as much as 90% of the terrestrial biomass. Therefore, forests play a major role in maintaining the global environment and are important as places where renewable resources are produced. In addition, forests have the functions of regulating the environment, such as land conservation, water source replenishment, and climate mitigation. For these reasons, forests greatly contribute to human life. We will conduct education and research to understand the characteristics of forests, maintain harmony with the natural environment and explore ways to sustainably use these resources and diverse functions through lectures and exercises based on ecology, botany, microbiology, soil science, geology, chemistry, physics, and information science. | Professor<br>Kisanuki Hiromitsu<br>Matsuda Yosuke<br>Matsumura Naoto*1<br>Itaya Akemi<br>Nakai Takahisa<br>Nonaka Hiroshi<br><br>Collaborative Professor<br>Abe Hisashi*2<br>Kanzaki Natsumi*2<br><br>Associate Professor<br>Torimaru Takeshi<br>Mizuno Takafumi<br>Fuchigami Yuki<br>Matsuo Naoko<br>Numamoto Shinya<br><br>Collaborative Associate Professor<br>Sugiyama Masaki*2<br>Toba Keisuke*2<br>Fujimoto Kiyohiko*2 | <br>kis@bio.mie-u.ac.jp<br>m-yosuke@bio.mie-u.ac.jp<br>nma@bio.mie-u.ac.jp<br>itaya@bio.mie-u.ac.jp<br>jaja@bio.mie-u.ac.jp<br>nonaka@bio.mie-u.ac.jp<br><br><br><br><br>torimaru@bio.mie-u.ac.jp<br>tmizuno@bio.mie-u.ac.jp<br>fuchigami@bio.mie-u.ac.jp<br>naoko@bio.mie-u.ac.jp<br>numamoto@bio.mie-u.ac.jp |

＊1：Applicants who wish to enroll under this supervisor should inform the Student Affairs Section, Graduate School of Bioresources.

＊2：Applicants who wish to enroll under this supervisor should inform Professor Matsuda Yosuke, Research Field of Forest Resources and Environmental Science. (m-yosuke @bio.mie-u.ac.jp)

## 1-2 International Sustainable Resource Science Course

| Research Fields | Research Outline | Supervisors | E-mail address |
|---|---|---|---|
| International Sustainable Resource Science | The International Sustainable Resource Science Course aims at producing leaders capable of finding solutions to challenges faced by rural communities where the majority of populations are engaged in the primary industry such as agriculture, forestry and fishery.<br>Today, issues in rural communities are becoming increasingly complicated due to the rapid change in social structure and ongoing surge of globalization. Understanding and tackling these issues requires an integrated knowledge of natural and social sciences with an international perspective. Therefore, the course implements multidisciplinary education at the interface between natural (crop and livestock) and social (agricultural economics and business administration) sciences. Students enrolled will be provided with the latest knowledge of each discipline and more importantly several opportunities to integrate knowledge gained from the disciplines. | Professor<br>Qingxiu Chang<br>Sekiya Nobuhito<br><br>Associate Professor<br>Yoshihara Yu | <br>chang@bio.mie-u.ac.jp<br>sekiya@bio.mie-u.ac.jp<br><br><br>yoshihara@bio.mie-u.ac.jp |

# 2. Department of Environmental Science and Technology

This department aims to understand the earth and its biosphere, made up of all the different ecosystems around the planet and to construct a sustainable life production system which harmonizes human activities and ecosystems. To make this possible, we carry out research and education on comprehensive scientific methods that encompass agriculture, science, and engineering, rooted in meteorology, environmental science, and ecology, looking at global ecosystems with their complex interactions among the land, sea, and air. In addition, we provide the latest in research and education, with reference to fieldwork, in order to understand the systems of environmental change and climate change by comprehending these complex systems mathematically, so we can respond to the various issues faced by humanity and human society that are linked with these.

## 2-1 Atmosphere and Sustainable Earth System Science Course

Changes in the earth's environment such as climate changes and abnormal weather work in concert with ecological environmental systems and earth systems that are made up of the atmosphere, the oceans, the soils, plants, the hydrosphere, the ecosphere, and the activities of humans and other animals. We conduct research on the basic structures, change processes, symbiotic relationships, and interactions that make up these systems, such as weather, climate, the water cycle, the ocean cycle, evolution of the earth, topography, conservation of the global environment, the physiological ecology , and human activities, all with reference to observation, measurement, experimentation, investigation, remote sensing, and numerical analysis. We provide education and research to train people who can use the new scientific knowledge gained from this research and the thinking and practical skills learned through research to give them perspective on the future of the earth and the human race, allowing them to contribute to the creation of the next-generation culture and construct a sustainable society, and be active around the world, tackling them on a global stage.

## 2-2 Environmental and Agricultural Engineering Course

The aim of this course is to contribute to the development of the region with a global perspective by solving problems related to the environment and agriculture, forestry, and fisheries using advanced scientific and engineering methods, for the creation and conservation of a rich environment. In particular, the course aims: (i) to make use of the measurement and control system engineering of environmental information with information processing technology at the core, based on knowledge of biology and ecology, (ii) to create a rich, safe, secure regional environment for rural regions, (iii) to target environmental conservation technologies for the ecosphere including the natural environment and human society, (iv) to provide research and education to develop people who can contribute to the growth of sustainable societies rooted in the region.

## 2-1 Atmosphere and Sustainable Earth System Science Course

| Research Fields | Research Outline | Supervisors | E-mail address |
|---|---|---|---|
| Atmosphere Ocean and Earth System Science | What have been driving climate changes of the past and present Earth? What is the future of our Earth's climate? And how should we deal with the future climate change? We, the human beings, have not yet obtained the answer to those problems. This should be the root of the global environmental problem and related energy issue, which we are now facing.<br>Short and long-term climate changes can be driven even without anthropogenic effects. One of such drivers is interaction among the atmosphere, ocean, and solid earth, which are inherent to the Earth's climate system. Forcing from the outside the Earth like change of solar activity and meteorite impact can also drive climate change.<br>In this course, we are aimed at understanding past, present, and future of the Earth's climate system as well as at finding the solution to the global environmental problem, based on a fusion among academic disciplines of Meteorology, Climate Dynamics, Ocean Climate, Sustainable Earth System, and Future Earth System Science. | Professor<br>Tachibana Yoshihiro*1<br>Sakamoto Tatsuhiko<br><br>Associate Professor<br>Nishii Kazuaki<br>Yamada Fukuji<br>Manda Atsuyoshi | <br>tachi@bio.mie-u.ac.jp<br>tats@bio.mie-u.ac.jp<br><br><br>nishii@bio.mie-u.ac.jp<br>fyamada@bio.mie-u.ac.jp<br>am@bio.mie-u.ac.jp |

＊1 : Applicants who wish to enroll under this supervisor should inform the Student Affairs Section, Graduate School of Bioresources.

| Research Fields | Research Outline | Supervisors | E-mail address |
|---|---|---|---|
| Adaptive Watershed Management | Research and education are carried out for planning, designing and supervising the development and use of land, forest and water resources, while paying attention to the conservation and restoring the natural environment. Making the balanced development and getting the agreement between human life and natural environment conservation are our goal. To reach the goal, issues concerning evaluation of watershed environment, management of ecosystem, creation of environmental equipment and safe space are investigated with socio-economic and natural scientific methodologies, or the integrated procedures using these methodologies. | Associate Professor<br>Morimoto Hidetsugu<br>Kondo Masaaki | morimoto@bio.mie-u.ac.jp<br>kondo-m@bio.mie-u.ac.jp |
| Earth System Analysis | In the field of earth system analysis,we study diverse research areas to protect earth's environment and protect humankind from various natural disasters. The spatial scale of research ranges from a small catchment scale to a global scale. Research areas we treat are landscape ecology, landscape planning, geographical information system, hydraulic engineering, river engineering, hydrology, meteorology, and seismology. As research tools, we mainly use theoretical and computational analyses with observational technuques. | Professor<br>Kuzuha Yasuhisa*1 | kuzuha@bio.mie-u.ac.jp |

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## 2-2 Environmental and Agricultural Engineering Course

| Research Fields | Research Outline | Supervisors | E-mail address |
|---|---|---|---|
| Environment Oriented Information and System Engineering | This course teaches and conducts research on measurements and control of environmental information based on information technology and systems engineering as a method of study in addition to biological and ecological knowledge, in order to maintain the coexistence between humans and other living creatures, and to insure a sustainable development of the mankind. In other words, this course is intended to provide expertise on improving environment conditions related to various kinds of mechanical systems and coexisting technology, as well as on the production and processing of bioresources with low technological impacts on the environments using high precision handling of the environmental information. | Professor<br>Fukushima Takashi<br>Xiu Lun Wang*1<br>Morio Yoshinari<br><br>Associate Professor<br>Suzuki Tetsuhito | t-fuku@bio.mie-u.ac.jp<br>wang@bio.mie-u.ac.jp<br>morio@bio.mie-u.ac.jp<br><br>t-suzuki@bio.mie-u.ac.jp |
| Regional Conservation Engineering | In this field, we're thinking to protect the safety and comfortable livelihood of local residents. The main objectives of this field are (1) Evaluation of the natural environment, restoration, conservation and management, (2) Design, construction and maintenance of various facilities, (3) The creation of prevention/mitigation approach to natural disasters. We're working from a scientific and engineering point of view on these. | Professor<br>Hossain Zakaria<br>Okajima Kenji | zakaria@bio.mie-u.ac.jp<br>okajima@bio.mie-u.ac.jp |

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| Research Fields | Research Outline | Supervisors | E-mail address |
|---|---|---|---|
| Environmental and Ecosystem Science | Multidisciplinary research and education are conducted to study the cycling of matter and sustainable agricultural fields in ecosystems from a view point of soil science. Numerical simulation models are developed to predict water, solute and gas transport with plant root uptake in a soil based on field and laboratory experiments. | Professor<br>Toride Nobuo*1<br>Watanabe Kunio<br><br>Associate Professor<br>Sakai Masaru | <br>ntoride@bio.mie-u.ac.jp<br>kunio@bio.mie-u.ac.jp<br><br><br>sakai-m@bio.mie-u.ac.jp |

*1 : Applicants who wish to enroll under this supervisor should inform the Student Affairs Section, Graduate School of Bioresources.

# 3. Department of Life Sciences

Department of Life Sciences aims to build the basic scientific theories related to the life sciences overall as well as a field of study related to the development, conservation, and management of marine bioresources , and to instruct the students through the practical education. Therefore, in this department, we carry out research and education in order to allow individual students to learn the research skills required for research in the life sciences, as well as to understand basic theory related to the life phenomena of bioresources at the ecosystem, community, population, individual, organ, cell, and molecular levels. This department is composed of the two courses of Applied Biological Chemistry and Marine Biological Science. The education and research carried out by each is shown below.

## 3-1 Applied Biological Chemistry Course

In this course, we clarify the physiological functions and structures of molecules produced by terrestrial and marine life, including animals, plants, algae, microorganisms, and a wide range of other bioresources using the strategy of bioscience and biotechnology in order to effectively utilize their nutritional component or bioactive substances. Using these results, we aim to establish a new basic and applicable technological system for the development of new functional molecules or foods, or environmental technology. Furthermore, we carry out advanced research and education from the perspectives of chemistry, biochemistry, molecular biology, and bioengineering, with a focus on research into the gene expression mechanisms of animals and microorganisms, the physiological functions of plant and animal cells, bio-information sensing and processing technologies, improvements of food functionality, and the maintenance of health and quality of life, as well as the development of technologies for using unutilized bioresources.

## 3-2 Marine Biological Science Course

In this course, our research field is the hydrosphere, with a focus on the oceans but also including lakes and rivers and other fresh water areas. We also look at everything in them, from plankton to algae, crustaceans, shellfish, fish, and marine mammals. We aim to understand the workings of these diverse life forms at the genetic, cellular, individual, community, and ecosystem levels. The methods we use include genetic analysis, physiological ecological analysis, collective analysis, behavioral analysis, and using marine observation technologies, including Information and Communication Technologies (ICTs). Moreover, we also carry out research and education on the conservation of marine and freshwater ecosystems and biodiversity, and on methods to sustainably reproduce and effectively utilize marine bioresources such as fish, shellfish, algae and so on. We also aim to enrich human life by the stable use of bioresources through the appropriate management of them as a resource, and effective increase and farming methods for them.

## 3-1 Applied Biological Chemistry Course

| Research Fields | Research Outline | Supervisors | E-mail address |
|---|---|---|---|
| Biochemistry and Biotechnology | In this Division, to utilize various bioresources in the wide fields such as foods, health, medicine, and environment, we aim at elucidating the mechanisms of varied vital phenomena of animals, plants and microorganisms, and the structures and functions of novel biomolecules, and furthermore establishing the theories and methodologies for applying the outcome of the fundamental researches to development of functional molecules and foods, and environmental technology. For the achievement of these objectives, advanced studies and professional education are carried out by conducting various researches, including “analyses of structures and functions of novel functional biomaterials and their utilization”, “the mechanism of gene expression of varied organisms”, “technology of biological information processing”, and “technology of unused bioresources application”. | Professor<br>Takebayashi Shin−ichiro<br>Suehara Ken-ichiro<br>Inagaki Minoru<br>Teranishi Katsunori<br>Hashimoto Atsushi<br>Kimura Tetsuya<br>Karita Shuichi＊1<br><br>Collaborative Professor<br>Ozeki Makoto＊2<br>Ishihara Noriyuki＊2<br><br>Associate Professor<br>Miyake Hideo<br>Masuda Yuichi<br>Katsuzaki Hirotaka<br>Okazaki Yozo<br>Isono Naoto<br>Kunitake Emi<br>Mishima Takashi<br>Nishio Masahiro<br>Umekawa Midori<br><br>Collaborative Associate Professor<br>Kobayashi Junya＊2 | <br>stake@bio.mie-u.ac.jp<br>suehara@bio.mie-u.ac.jp<br>inagaki@bio.mie-u.ac.jp<br>teranisi@bio.mie-u.ac.jp<br>hasimoto@bio.mie-u.ac.jp<br>t-kimura@bio.mie-u.ac.jp<br>karita@bio.mie-u.ac.jp<br><br><br><br><br><br><br>miyake@bio.mie-u.ac.jp<br>masuda@bio.mie-u.ac.jp<br>katsuzak@bio.mie-u.ac.jp<br>yozo.okazaki@bio.mie-u.ac.jp<br>isono@bio.mie-u.ac.jp<br>kunitake@bio.mie-u.ac.jp<br>mishima@bio.mie-u.ac.jp<br>nishio@bio.mie-u.ac.jp<br>midoriumekawa@bio.mie-u.ac.jp |

＊1：Applicants who wish to enroll under this supervisor should inform the Student Affairs Section, Graduate School of Bioresources.

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| Research Fields | Research Outline | Supervisors | E-mail address |
|---|---|---|---|
| Marine Life Science and Molecular Chemistry | In marine life science and molecular chemistry field, we research various life phenomena of microorganisms, fishes, shellfishes, and algae in marine environments at the levels of a molecule, e.g., biologically active substances, protein, and gene or genome to clarify various kinds of physiological functions. Based on these investigations, we publish scientific and technological findings to support the development of functional foods, cosmetics, disease-preventive pharmaceuticals. In addition, these findings also contribute to the improvement of hygienic conditions in manufacturing process and increasing in the quality of healthy life. | Professor<br>Kakinuma Makoto<br>Ooi Atsushi<br>Funabara Daisuke<br>Fukuzaki Satoshi<br><br>Associate Professor<br>Itoh Tomohiro<br>Tanaka Reiji<br>Okazaki Fumiyoshi<br>Shibata Toshiyuki | <br>kakinuma@bio.mie-u.ac.jp<br>ooi@bio.mie-u.ac.jp<br>funabara@bio.mie-u.ac.jp<br>satoshi_fukuzaki@bio.mie-u.ac.jp<br><br><br>titoh@bio.mie-u.ac.jp<br>tanakar@bio.mie-u.ac.jp<br>okazaki@bio.mie-u.ac.jp<br>shibata@bio.mie-u.ac.jp |

## 3-2 Marine Biological Science Course

| Research Fields | Research Outline | Supervisors | E-mail address |
|---|---|---|---|
| Marine Biology | It is an important problem to maintain and increase marine bioresources such as fishes and algae, in addition to the conservation of marine ecosystems. This academic course aims to conduct education and researches in biodiversities, genetics, physiology, ecology, ethology and pathology of marine creatures at the level of gene, cell, individual, population and ecosystem respectively, for the establishment of new techniques in resource management, fisheries techniques, ICT applications for fisheries, and effective sustainable use of marine bioresources. In addition, Fisheries Technology Institute (a Cooperative Graduate School of Mie University) also performs education and researches for the elucidation of biofunctions and genome analysis of marine creatures and their effective use in the field of developmental genetics, breeding science, and nutrition and metabolism. | Professor | |
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