

**APPLICATION PROCEDURES
FOR THE AUTUMN ADMISSION OF
INTERNATIONAL STUDENTS
TO FUJITA HEALTH UNIVERSITY**

**MASTER'S COURSE
(AUTUMN ADMISSION 2024)**

**FUJITA HEALTH UNIVERSITY
GRADUATE SCHOOL OF MEDICAL SCIENCES**

1-98 Dengakugakubo, Kutsukake-cho, Toyoake, Aichi 470-1192, Japan
TEL: +81-(0)562-93-2504 Email: hs-jimk2@fujita-hu.ac.jp FAX: +81-(0)562-93-4593

1 Department Program

The Graduate School of Medical Sciences provides opportunities for study in three fields: Clinical Laboratory Sciences, Radiological Sciences and Biomedical Engineering. Prior to application, the applicants should contact professors at the desired departments / laboratories.

Field	Departments
Clinical Laboratory Sciences	Clinical Laboratory Sciences Genetic Counseling Assisted Reproductive Medicine
Radiological Sciences	Radiological Sciences Medical Physics
Biomedical Engineering	Biomedical Engineering

- For the convenience of working students (currently employed in hospitals, research or educational facilities, companies, etc.), we offer day and evening classes. Special consideration for credit acquisition includes evening classes (18:00 – 21:10), Saturdays, and summer sessions.
- Working student applicants must first obtain the consent of their work supervisor to join this course. For more information on course completion, carefully consult with and follow the professor's instructions.
- Some fields may require a Japanese medical professions license.

2 Online Application Website

The provided URL enables you to review application procedures, download mandatory document templates, and create your “MyPage.”

<https://exam.fujita-hu.ac.jp/gswe24eg/top.html>

- Please write down or print out your “MyPage” login information (user ID and password). This login information will be required every time you need to access “MyPage.”

3 Application Qualifications

Individuals who do not hold Japanese citizenship and meet any of the criteria listed below by September of the application year

- (1) Individuals who have completed or expect to complete 16 years of education in Japan or have graduated from a 4-year university in Japan.
- (2) Individuals who have completed or expect to complete 16 years of education in a foreign country.
- (3) Individuals who demonstrate abilities comparable to or higher than those in (1) and (2).

4 Preliminary Screening

Applicants intending to apply to our Graduate School based on qualification (2) or (3) are subject to preliminary screening. After contacting professors in the desired departments or laboratories, please submit the required documents via both email and postal mail within the application period. The designated form (A4 size) was downloaded from the application website.

Application and Result Notification Periods for Preliminary Screening

Application Start	Application Deadline	Result Notification
January 15, 2024	January 19, 2024	January 26, 2024

Mandatory Documents

- | | |
|---|--------|
| [1] Request for preliminary screening (designated form, A4 size) | 1 form |
| [2] Curriculum vitae (designated form, A4 size) | 1 form |
| [3] Certificate or provisional certificate of degree or diploma* ¹ | 1 form |
| [4] Academic transcript* ² | 1 form |
| [5] Copy of the qualifications and licenses referred to in the work history | 1 copy |
| [6] Report of research achievements (designated form, A4 size)* ³ | 1 from |

*¹, *² must have been issued between April of the preceding year and January of the current application year (within 9 months).

*³ Not required if there are no research achievements.

- Applicants whose current names do not match those on the certificate of graduation or any other documents are required to submit an official certification of the name change.
- If the certificates are not in English or Japanese, applicants must submit both originals and translations by an accredited translator.
- If [3] or [4] cannot be issued due to the expiration of the document retention period or other reasons, please submit a "Letter of Reason for Not Being Able to Issue a Certificate" prepared by the applicant's former school (any format is acceptable).
- The documents must arrive by the deadline.

Address for Document Submission

Submit the documents by email, post, or in person to:

Fujita Health University, Graduate School of Medical Sciences Affairs Office

Fujita Health University Building 2, 3rd Floor

1-98 Dengakugakubo, Kutsukake-cho, Toyoake, Aichi 470-1192, Japan

TEL: +81-562-93-2504, Office Hours: 9:00–16:00 (weekdays)

E-mail: hs-jimk2@fujita-hu.ac.jp (cc: professor you would like to have as your supervisor)

Announcement of Preliminary Screening Result

Applicants receive the screening results via e-mail. Successful applicants are then required to submit the documents listed under "Mandatory Documents" in the "Application Procedure" section.

5 Application Procedure

Applicants must complete the online registration process, submit application documents (by e-mail and the original by post or in person), and pay the examination fee.

Application Period and Examination Date

Application and Payment Start	Application and Payment Deadline	Examination Date	Examination Result Notification
January 29, 2024	February 9, 2024	February 19, 2024	3 pm, February 26 to Noon, February 28, 2024

Payment period: January 29, 2024 – 4:59 PM (JST), February 9, 2024.

Registration via the Online Application Website

Access the registration page and follow the instructions to complete online registration.

- Please carefully review the input information before finalizing the registration. Please contact the Graduate School Affairs Office for requests to change the information after completing the online registration process.

Mandatory Documents

- | | |
|--|---------------|
| [1] Application confirmation card (Printed from “MyPage”) | 1 form |
| [2] Curriculum vitae (designated form, A4 size) | 1 form |
| [3] Certificate or provisional certificate of degree or diploma* ¹ | 1 form |
| [4] Academic transcript* ² | 1 form |
| [5] Statement of purpose (designated form, A4 size) | 1 form |
| [6] Research planning (designated form, A4 size) | 1 form |
| [7] Recommendation letter (free form) | from 1 person |
| [8] Passport copy | 1 copy |
| [9] Photocopy of the wire transfer record (certificate of the remittance) | 1 copy |
| [10] Pre-screening sheet for accepting foreigners (designated form, A4 size)* ³ | 1 copy |

Additional Documents

- | | |
|--|--------|
| [11] Copy of the e-mail notification of the preliminary screening results
For applicants who are subject to the preliminary screening | 1 copy |
| [12] Document granting permission from the current workplace
For working students (designated form, A4 size) | 1 form |

*¹, *² must have been issued between April of the preceding year and January of the current application year (within 9 months).

*³ International Students, etc.: Under the rules of the FHU security export control, the supervisor and the applicant will prepare, and the professor submit.

- Applicant whose current name does not match that on the certificate of graduation or any other documents is required to submit an official certification of the name change.
- If the certificates are not in English or Japanese, applicants must submit both the originals and translations by an accredited translator.
- Applicants who need special arrangements for physical disabilities must inform us when applying.

- After the application forms are submitted, they are not allowed to change. The examination fees will not be returned for any reason.
- If any information in the application documents is found to be false, admission and/or enrollment may be revoked at any time.

Examination Fee

The applicants should use a bank allowing foreign remittance (bank wire transfer) and transfer an examination fee of 20,000 JPY into the following bank account:

- Please do not send US dollars or any other currencies. If you make payments in currencies other than JPY, your application will not be accepted.
- Please note that you will bear all service charges/commissions for bank transfers. There may also be other bank transfer fees for correspondent banks (routing banks). Please confirm these fees when you make the transfer.
- Please ensure that you indicate to the remitting bank that you will bear all service charges/commission fees.
- In the message column, write the name of the applicants in clear lettering.
- Please make sure to submit a copy of the certificate of remittance (receipt) issued by the bank, along with other application documents.

Bank Name	Sumitomo Mitsui Banking Corporation
Branch Name	Nagoya-Ekimae Branch
Bank Address	1-2-5 Meieki, Nakamura-ku Nagoya, Aichi, Japan. Postal Code: 450-0002
Bank Telephone Number	+81-52-541-2371
SWIFT code	SMBCJPJT
Bank Account Number	402-626775
Bank Account • Address	FUJITA-GAKUEN 1-98 Dengakugakubo, Kutsukake-cho, Toyoake, Aichi, Japan Postal Code: 470-1192
Telephone	+81-562-93-2000
Examination fee	20,000 JPY (+ all service charges/commission fees)
Method of payment	Advise & Pay

Address for Document Submission

Submit the documents by email, post, or in person to:

Fujita Health University, Graduate School of Medical Sciences Affairs Office

Fujita Health University Building 2, 3rd Floor

1-98 Dengakugakubo, Kutsukake-cho, Toyoake, Aichi 470-1192, Japan

TEL: +81-562-93-2504, Office Hours: 9:00–16:00 (weekdays)

E-mail: hs-jimk2@fujita-hu.ac.jp (cc: professor you would like to have supervised)

- When submitting documents by post, be sure to use registered mail or an equivalent postal method. Documents that arrive after the deadline will not be accepted.

6 Examination (online)

Place and Time of Examination

The examination will be conducted online. Please ensure a stable internet connection. The start time and access details will be communicated individually.

Examination Contents and Methods

The examination will include an oral interview and a discussion of your research plan. Applicants may share their presentation materials with the examiners if necessary.

Announcement of Examination Result

The examination results will be announced on the website. Successful applicants should contact professors of desired departments/laboratories directly but should not contact Graduate Student Affairs.

7 Enrollment Procedures and School Fees

Each successful applicant will receive enrollment guidance with their notification of acceptance via email. Please follow the directions of the guidance. The enrollment and tuition fees are as follows:

Enrollment Fee	150,000 JPY
Tuition Fee	750,000 JPY
Total	900,000 JPY

Payment Schedule

The enrollment fee (150,000 JPY), half the tuition fee (375,000 JPY), and the remaining tuition fee (375,000 JPY) must be paid according to the following schedule:

Fee	Payment Deadline
Enrollment Fee (150,000 JPY) Half of the Tuition Fee (375,000 JPY)	March 4, 2024
Half of the Tuition Fee (375,000 JPY)	August 30, 2024

- The fees will not be refunded for any reason. However, if the applicant submits a notice of withdrawal from enrollment (optional format) that arrives by 17:00 on August 30, 2024 and requests a refund for the payment of the school fee, it will be refunded, excluding the enrollment fee.

Tuition Fee Reduction System (Master's Program)

We have established a system to reduce the tuition for students who are devoting themselves to their own training or research under their supervisor and who haven't signed a full-time employment contract. Upon the approval of your application, the annual tuition fee of 750,000 JPY will be reduced to 550,000 JPY, which is a reduction of 200,000 JPY.

Fujita Academy Grant

The Fujita Academy Grant is provided to prospective international students facing financial challenges that are hindering their studies at Fujita Health University. Recipients, who show exceptional motivation, are not required to repay the grant. Interested students should contact their accepting supervisors to apply for the grant.

For more details, please check the website.

<https://www.fujita-hu.ac.jp/en/faculty/scholarship/kka9ar00000025i5.html>

Global Education and Research Grant

Through the 2024 “Global Education and Research Grant” from Fujita Health University, instructors accepting international graduate students hire them as research assistants for international projects. The grant provides 50,000 JPY per person per month with an annual acceptance quota of four students. Interested students should contact their accepting supervisor to apply for the grant.

For more details, please check the website.

<https://www.fujita-hu.ac.jp/~intl/forfhumembers/jyoseikin/index.html>

Japanese Government Scholarship

The Japanese government offers the MEXT Scholarship for Embassy Recommendation and University Recommendation. International students who wish to apply for the scholarship should refer to the application guidelines on the MEXT website for more details.

<https://www.mext.go.jp/en/policy/education/highered/title02/detail02/sdetail02/1373897.htm>

8 Declaration Regarding the “Handling of Personal Information”

- The university will take all necessary measures for the proper handling and safe management of all personal information in accordance with the Act on the Protection of Personal Information.
- Personal information submitted at the time of application will be used only for procedures related to the admission process.
- Personal information submitted will not be disclosed or submitted to any third party without the applicant’s consent except in cases where disclosure is required by law.

9 Contact Information for Application

Fujita Health University, Graduate School of Medical Sciences Affairs Office

Fujita Health University Building 2, 3rd Floor

1-98 Dengakugakubo, Kutsukake-cho, Toyoake, Aichi 470-1192, Japan

TEL: +81-562-93-2504 FAX : +81-562-93-4593 E-mail: hs-jimk2@fujita-hu.ac.jp

List of Major Subjects and Academic Advisors for 2024 Academic Year

*The major subjects and academic advisors may change as needed.

1) Field of Clinical Laboratory Sciences

Department of Clinical Laboratory Sciences

Course Title	Course Aims and Research Subject
Graduate Thesis of Clinical Laboratory Sciences SAITO Kuniaki ICHINO Naohiro TAKEMATSU Hiromu OHASHI Koji NARUSE Hiroyuki SUZUKI Koji MOURI Akihiro SUGIMOTO Keiko NAGAO Shizuko YAMAMOTO Naoki ISHIKAWA Hiroaki OSAKABE Keisuke YAMAMOTO Yasuko SHIOGAMA Kazuya HOSHI Masato MATSUURA Hideaki	<p><i>SAITO Kuniaki</i> To help realize healthy life expectancy and preemptive medicine, we develop biomarkers and diagnostic systems for predicting early disease onset through industry-government-academia collaboration.</p> <ol style="list-style-type: none"> 1. Amino acid metabolism and immune system 2. Analysis of various diseases based on metabolic changes 3. Personalized medicine - drug effect/side effect/prognosis prediction <p><i>ICHINO Naohiro</i> Current ultrasonography has made it possible to measure tissue stiffness. We will provide research for the early detection and diagnosis of diseases by applying this technology. Specifically, research guidance will be provided on the following topics.</p> <ol style="list-style-type: none"> 1. A novel scoring system for non-invasive and differential diagnosis of NAFLD/NASH. 2. Development of biomarkers for pre-arteriosclerosis diagnosis to preemptive medicine. <p><i>TAKEMATSU Hiromu</i> We utilize genetics to understand important biological phenomena in the molecular biological level. Projects includes cellular responses of immune cells such as lymphocytes. Target molecules includes cellular glycans and lipids.</p> <ol style="list-style-type: none"> 1. B cell antigen receptor signaling to control antibody production 2. Endomitosis, a specific cell cycle event to produce giant cells, controlled by glycolipid 3. Development of human-specific condition with xeno-auto-antigen mediated autoimmunity in mice <p><i>OHASHI Koji</i> Our research aims to elucidate the mechanisms of metabolic syndrome pathogenesis from an epigenetic perspective and to apply this to clinical testing. To elucidate the effects on the next generation of exposure at daily intake levels that do not directly affect the individual who ingests them at daily intake levels.</p> <p><i>NARUSE Hiroyuki</i> We aim to elucidate the pathophysiology of various diseases using the clinical data and biomarkers, and apply it to clinical practice.</p> <ol style="list-style-type: none"> 1. Study on the pathophysiology of cardiovascular disease using biomarkers. 2. Study on the pathophysiology of acute kidney injury using biomarkers. <p><i>SUZUKI Koji</i> Through molecular epidemiological study using high-performance liquid chromatography and molecular biology techniques, we will contribute to elucidating the mechanism of lifestyle related diseases and aim to establish disease prevention from a new perspective.</p> <ol style="list-style-type: none"> 1. Molecular epidemiological study on prevention of lifestyle-related diseases 2. Large-scale cohort study for evaluation of cancer risk

Course Title	Course Aims and Research Subject
<p>Graduate Thesis of Clinical Laboratory Sciences</p> <p>SAITO Kuniaki ICHINO Naohiro TAKEMATSU Hiromu OHASHI Koji NARUSE Hiroyuki SUZUKI Koji MOURI Akihiro SUGIMOTO Keiko NAGAO Shizuko YAMAMOTO Naoki ISHIKAWA Hiroaki OSAKABE Keisuke YAMAMOTO Yasuko SHIOGAMA Kazuya HOSHI Masato MATSUURA Hideaki</p>	<p><i>MOURI Akihiro</i></p> <p>Neuropsychiatric disorders such as Alzheimer's disease, Parkinson's disease, depression, schizophrenia, and autism are the targets of research and investigated using patients' blood and other clinical samples. We translate epidemiological and genetic findings in humans to mice and create mouse models of neuropsychiatric disorders to explore pathophysiology and pathogenesis using behavioral, pharmacological and neurochemical techniques. Based on the these studies, we try to develop new therapeutics, functional foods, and diagnostic biomarkers and conduct translational research to contribute healthy society and development of medicine.</p> <ol style="list-style-type: none"> 1. Elucidating the pathophysiology of neuropsychiatric disorders using clinical samples and animal models 2. Developing pharmaceuticals and functional foods by basic research using animal models of neuropsychiatric diseases 3. Searching for biomarkers and developing diagnostic drugs for neuropsychiatric diseases <p><i>SUGIMOTO Keiko</i></p> <p>Recently, the importance of echocardiographic data is increasing with the increase of heart failure patients and advances in the treatment of cardiac disease. In this laboratory, we will examine the clinical usefulness of analytical methods and indices using echocardiography.</p> <ol style="list-style-type: none"> 1. Search of cardiac function index for predicting prognosis by echocardiography 2. Analysis of electromechanical changes of heart due to emotional and physical stress using ECG <p><i>NAGAO Shizuko</i></p> <p>We aim to elucidate cell signaling pathways in the diseases including genetic disorders and lifestyle-related disorders obtained from genome editing animals, transgenic animals, spontaneous disease models, primary cells, cell lines or iPS cells. We also aim to apply clinical applications by activating or suppressing the obtained abnormal cell signaling pathways.</p> <ol style="list-style-type: none"> 1. Study on cell signaling pathways related to diseases using genome editing animals, transgenic animals and/or animal models of spontaneous disease 2. Study on cell signaling pathways related to diseases using primary cells, cell lines or iPS cells 3. Research on the development of new therapeutic agents linked to treatment of diseases using clinical laboratory, molecular genetics, pharmacological analysis and omics comprehensive analysis <p><i>YAMAMOTO Naoki</i></p> <p>Students will acquire knowledge and skills as cell culture professionals useful in clinical and medical research such as regenerative medicine through the creation of new cell lines of iPS cells, tissue stem cells and genetically modified immortalized cells for use in regenerative medicine and drug discovery research, as well as the creation of new cancer cell lines and isolation research of cancer stem cells for use in cancer research.</p> <ol style="list-style-type: none"> 1. Basic research on regenerative medicine using iPS cells. 2. Research on the generation and validation of new genetically modified immortalized cells and iPS cells. 3. Research on the establishment of tissue stem cells and cancer stem cell lines. 4. Qualification as a cell culture technologist or clinical cell culture technologist, exercises at a cell culture processing facility.

Course Title	Course Aims and Research Subject
<p>Graduate Thesis of Clinical Laboratory Sciences</p> <p>SAITO Kuniaki ICHINO Naohiro TAKEMATSU Hiromu OHASHI Koji NARUSE Hiroyuki SUZUKI Koji MOURI Akihiro SUGIMOTO Keiko NAGAO Shizuko YAMAMOTO Naoki ISHIKAWA Hiroaki OSAKABE Keisuke YAMAMOTO Yasuko SHIOGAMA Kazuya HOSHI Masato MATSUURA Hideaki</p>	<p>ISHIKAWA Hiroaki We focus on microRNAs in high-density lipoproteins (HDL) and aim to establish their usefulness as biomarkers for various diseases.</p> <ol style="list-style-type: none"> 1. Analysis of miRNAs in HDL for arteriosclerosis onset and progression 2. Analysis of HDL-miRNAs as a biomarker for various vascular diseases <p>OSAKABE Keisuke Using ultrasonography, which can be performed noninvasively, we will study the usefulness of liver stiffness measurements and ultrasonic attenuation coefficients in the pathological stage diagnosis of chronic liver disease and in the evaluation of treatment efficacy.</p> <ol style="list-style-type: none"> 1. Non-invasive evaluation of liver fibrosis in chronic hepatitis B 2. Study on evaluation of liver fibrosis in follow-up of chronic liver disease 3. Study on evaluation method of liver fibrosis and steatosis in nonalcoholic fatty liver disease <p>YAMAMOTO Yasuko To realize preemptive medicine, we develop biomarkers and diagnostic systems to predict early disease onset using healthy volunteer database samples, including samples with the risk of lifestyle-related diseases.</p> <ol style="list-style-type: none"> 1. Analysis of biofunctional molecules by molecular biological techniques 2. Proteomic analysis in several diseases related to metabolic changes 3. Behavioral analysis using animal models – focus on metabolic changes of tryptophan metabolism <p>SHIOGAMA Kazuya The main focus in clinical research using pathological specimens of various diseases, and aims to clarify the pathology of that disease through comprehensive analysis using imaging techniques.</p> <ol style="list-style-type: none"> 1. The rule of neutrophil extracellular traps (NETs) in inflammatory diseases 2. The role of neutrophil included NETs in the cancer microenvironment and its significance 3. Immunohistochemical study of the concept of new cell death called PANoptosis in pathological specimens. 4. Molecular pathological study of bacterial vaginosis and various bacteria in cytology specimens 5. Technological development of available for pathological diagnosis <p>HOSHI Masato We aim to elucidate the role of tryptophan and glucose metabolism in immune cells, and establish novel immunotherapies for inflammatory diseases, mainly tumors, with a view to clinical application. We also aim to establish biomarkers for the early diagnosis and prognosis of chronic kidney disease, a national disease.</p> <ol style="list-style-type: none"> 1. The role of tryptophan and glucose metabolism in immune cells 2. Establishment of novel biomarkers in chronic kidney disease 3. The effects of rare sugars in various inflammatory diseases <p>MATSUURA Hideaki We aim to elucidate the mechanisms of antibody production, which is clinically important in blood transfusion and transplantation medicine, and to establish methods to regulate it. In addition, we will conduct research on blood transfusion and transplantation-related tests performed in clinical practice to standardize and improve the quality of these tests.</p> <ol style="list-style-type: none"> 1. Mechanism of production of anti-erythrocyte antibodies 2. Development of new compatibility tests (blood transfusion, transplantation) 3. Investigate on HLA and disease sensitivities.

Department of Genetic Counseling

Course Title	Course Aims and Research Subject
<p>Graduate Thesis of Genetics</p> <p>OHYE Tamae</p>	<p>Create a master's thesis by researching specific themes related to genetic counseling, and reviewing the literature or gaining deep insight into the problems associated with the cases in which you were present. Through master's research, cultivate the qualifications involved in a certified genetic counselor with thinking and insight.</p> <p><i>OHYE Tamae</i></p> <ol style="list-style-type: none"> 1. Study on support for patients with hereditary diseases and their families 2. Study on medical care and social support systems related to hereditary diseases 3. Study on coping with secondary findings found by accident by comprehensive inspection method

Department of Assisted reproductive medicine

Course Title	Course Aims and Research Subject
<p>Graduate Thesis of Assisted Reproductive Medicine</p> <p>NISHIO Eiji</p>	<p>Our training course instructs assisted reproductive technology with murine gamete, fertilized egg and embryo using required culture media in incubating instruments. As the next step, clinical training will be performed using human gamete, fertilized egg and embryo, at clinical practice facilities of in-vitro fertilization and embryo transfer registered by the Japan Society of Obstetrics and Gynecology (Training mainly in Fujita Health University Hospital and/or other collaborating fertility clinics). Further, attendees will get higher ethical standards and dignity for assisted reproductive technology in experiencing the duties of clinical embryologist, with intense interest in this field.</p> <p><i>NISHIO Eiji</i></p> <ol style="list-style-type: none"> 1. Research on the improvement of assisted reproductive technology through a basic approach. 2. Acquisition of essential knowledge and skills for assisted reproductive technology. 3. Obtain eligibility requirements for clinical embryologist qualifying examination. 4. Present case reports in a treatise format.

2) Field of Radiological Sciences

Department of Radiological Sciences

Course Title	Course Aims and Research Subject
Graduate Thesis of Radiological Sciences KOBAYASHI Shigeki MINAMI Kazuyuki TAKATSU Yasuo SHIRAKAWA Seiji SHIIBA Takuro MUTO Koichi KOBAYASHI Masanao TATEYAMA Tomoko	<p><i>KOBAYASHI Shigeki</i></p> <p>To promote research that contributes to the creation of next-generation medical care forms.</p> <ol style="list-style-type: none"> 1. Study on the development of next-generation mammography using energy-resolved photon-counting X-ray detector 2. Study on improvement of medical efficiency using artificial intelligence for next-generation hospital forms. <p><i>MINAMI Kazuyuki</i></p> <p>In this laboratory, we will conduct research on measurement and simulation of exposure dose in the field of nuclear medicine.</p> <ol style="list-style-type: none"> 1. Study on radiation exposure evaluation method in nuclear medicine 2. Study on radiation protection measures in the field of nuclear medicine 3. Study on radiation exposure simulation <p><i>TAKATSU Yasuo</i></p> <p>To study the involvement of biological systems using magnetic resonance imaging. Considering imaging techniques and their clinical applications, the aim is to provide information from the analysis and evaluation of images.</p> <ol style="list-style-type: none"> 1. Analysis of clinical images using Magnetic Resonance Imaging. 2. Investigation of imaging methods and clinical evaluation in Magnetic Resonance Imaging <p><i>SHIRAKAWA Seiji</i></p> <p>Through Monte Carlo simulation, this course will understand the physical processes related to nuclear medicine images, and will study image reconstruction and various compensation methods.</p> <ol style="list-style-type: none"> 1. Monte Carlo simulation-based SPECT reconstruction 2. Study on image processing using deep learning <p><i>SHIIBA Takuro</i></p> <p>To develop the ability to respond flexibly to a wide range of issues, understand the characteristics of molecular imaging, such as MRI and nuclear medicine, the acquisition of image processing, machine learning and Monte Carlo simulation techniques.</p> <ol style="list-style-type: none"> 1. Analysis of medical imaging for neurodegenerative diseases 2. Study on evaluation of SPECT quantitative techniques. 3. Study on dose evaluation using Monte Carlo simulation for nuclear medicine therapy <p><i>MUTO Koichi</i></p> <p>The research will focus on the application of medical informatics to radiology, from the development of information systems for radiology departments to the standardization of information related to the field of radiology, such as DICOM. Furthermore, the management and processing of the radiological big data will be studied.</p> <ol style="list-style-type: none"> 1. Standardization of medical information and its application 2. Utilization of open source software in medical information system development 3. Data management and processing required for medical big data

Course Title	Course Aims and Research Subject
Graduate Thesis of Radiological Sciences KOBAYASHI Shigeki MINAMI Kazuyuki TAKATSU Yasuo SHIRAKAWA Seiji SHIIBA Takuro MUTO Koichi KOBAYASHI Masanao TATEYAMA Tomoko	<p><i>KOBAYASHI Masanao</i></p> <ol style="list-style-type: none"> 1. Study on improvement of dosimetry and evaluation method in X-ray diagnosis 2. Study on development of dose evaluation method using Monte Carlo simulation 3. Research on international trends and evaluation of medical radiation systems 4. Study on development of digital teaching materials using virtual reality <p><i>TATEYAMA Tomoko</i></p> <p>While CAD provides valuable information for diagnosis and clinical treatment, it is daily collecting medical images, biopsy information, and many other types of data of various types and properties, too. The effective establishment, storage, processing, and representation of the data will have a significant contribution to the enhancement of AI and CAD applications and their accuracy in the future..</p> <ol style="list-style-type: none"> 1. Data visualization and analysis in clinical scenes, and database publication (Fundamental research) 2. Medical Data fusion and Analysis of multimodality based on Artificial Intelligence (Fundamental research) 3. Assessment and Stage Estimation of Disease using 3D Morphological Changes of Organs based on AI (CAD) 4. Gesture Analysis and Database Publication for Support Clinical Operations (Support for diagnostic, surgical and therapeutic)

Course Title	Course Aims and Research Subject
<p>Graduate Thesis of Medical Physics</p> <p>ASADA Yasuki HAYASHI Naoki MATSUBARA Hiroaki KUNITOMO Hiroshi YASUI Keisuke</p>	<p>Medical physics is application of physics to medicine and healthcare; using physics for patient imaging, management and treatment. In this course, students understand the significance of learning medical physics (especially, health physics and therapeutic radiological physics), and carry out individual theme study regarding development of the new technique or knowledge. Finally, students write thesis for master degree including the outcome in master course term.</p> <p>ASADA Yasuki</p> <ol style="list-style-type: none"> 1. Analysis of patient exposure by general radiography and mammography 2. Study on measurement of X-ray quality and output 3. Development of software for estimation of patient exposure in diagnostic X-ray domain <p>HAYASHI Naoki</p> <ol style="list-style-type: none"> 1. Study on standard dosimetry for therapeutic radiation. 2. Study on safer radiotherapy procedure and its assessment with FMEA. 3. Study on improvement of accuracy and precision in radiotherapy. 4. Study on development of surface image guidance system <p>MATSUBARA Hiroaki</p> <ol style="list-style-type: none"> 1. Study of malfunctions in cardiac implantable electronic devices caused by diagnostic and therapeutic radiation 2. Medical physics particularly based on nuclear physics <p>KUNITOMO Hiroshi</p> <p>My laboratory focuses on</p> <ol style="list-style-type: none"> 1) image quality metrics for digital radiography 2) procedural optimization of dose metrics based on image quality 3) image quality metrics for mammography 4) image quality metrics for fluoroscopy 5) image quality metrics for cone-beam CT <p>YASUI Keisuke</p> <ol style="list-style-type: none"> 1. Proton dosimetry: Estimation of perturbation correction factors / Establishment of postal dose auditing in proton therapy 2. Establishment of Precision Medicine in radiotherapy: Investigation using cultured cells 3. Development of dosimetry devices using 3D printers 4. Performance verification of new technologies related to treatment planning systems

3) Field of Biomedical Engineering

Department of Biomedical Engineering

Course Title	Course Aims and Research Subject
<p>Graduate Thesis of Biomedical Engineering</p> <p>HIBIYA Makoto IHIRA Masaru ITO Hiroyasu MIURA Yasuo FUJIGAKI Hidetsugu UMEZAWA Eizou HATTORI Hidekazu MIZUTANI Kenmei OHASHI Atsushi HIRANO Harutoyo HORI Hideo</p>	<p><i>HIBIYA Makoto</i> Extracorporeal circulation, as practiced by artificial heart-lung machines used in cardiac surgery, places the patient in a non-physiological setting. Disposable products and other products used for extracorporeal circulation have been improved in terms of biocompatibility. In addition, technologies for extracorporeal circulation have been developed that use the supply-demand balance of oxygen as an indicator. We will study the effects of these newer technologies. 1. Study on the effect of extracorporeal circulation on living body</p> <p><i>IHIRA Masaru</i> Our research is mainly focused on rapid diagnostic methods using isothermal gene amplification. The main research themes are the multiplex LAMP method using gene chips and a novel gene amplification method for using microRNA as a novel biomarker. 1. The development of rapid diagnostic methods as new biomarker using miRNA for myocardial infarction. 2. Development of multiplex LAMP method using gene chips 3. Study for natural history of herpes virus or rotavirus</p> <p><i>ITO Hiroyasu</i> We use immunological approaches to analyze the pathogenesis of cancer and develop new strategies for cancer therapy using small animal models and human specimens. 1. Development of novel cancer immunotherapy targeting immune checkpoint molecules. 2. Development of cancer vaccine therapy using tumor-bearing animal models.</p> <p><i>MIURA Yasuo</i> The demand placed upon medical institutions entails the secure provision of advanced and highly specialized healthcare services, fostering an environment of confidence for patients seeking medical assistance. To remain at the forefront of the groundbreaking advancements resulting from the rapid progress in scientific and technological domains, dedicated endeavors are being undertaken to excel in the delivery, investigation, advancement, and education pertaining to state-of-the-art transfusion and cell therapies. 1. Pioneering the development of a robust and secure framework for transfusion medicine 2. Establishing a strong foundation for the forefront exploration of cutting-edge cell therapy methodologies</p> <p><i>FUJIGAKI Hidetsugu</i> To develop companion diagnostics by predicting drug efficacy and side effects, we develop diagnostic agents targeting metabolism of amino acids and drugs. We also try to develop novel therapeutics for several diseases such as psychiatric disorders and cancer using metabolic enzyme inhibitors. 1. Development of therapeutic drugs and functional foods targeting enzymes in tryptophan metabolism 2. Development of biomarkers and diagnostic drugs by metabolomic analysis using mass spectrometry</p> <p><i>UMEZAWA Eizou</i> Water molecules in living systems move around randomly in diffusion motion. Diffusion MRI uses its statistical properties to obtain information about tissue microstructure and function. We use physics, mathematics, and mathematical data science to study diffusion MRI. 1. Study on diffusion MRI 2. Study on mathematical and physical foundation of MRI, and new imaging and analysis methods of MRI based on it.</p>

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