APPLICATION PROCEDURES

For INTERNATIONAL STUDENTS

MASTER'S COURSE

AUTUMN ADMISSION 2026

GRADUATE SCHOOL OF MEDICAL SCIENCES

- Field of Clinical Laboratory Sciences
- Field of Radiological Sciences
- Field of Biomedical Engineering

FUJITA HEALTH UNIVERSITY
GRADUATE SCHOOL OF MEDICAL SCIENCES
藤田医科大学大学院医療科学研究科

1. Field and Department

The Graduate School of Medical Sciences offers opportunities for study in three fields.
Standard length of study in master's course: 2 years

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

- Before applying, applicants must contact a prospective professor and obtain the professor's acknowledgement. Refer to the List of Major Subjects and Academic Advisors for 2026 Academic Year on later pages to see professor's researches.
- We offer both day and evening classes (18:00 - 21:10) for the convenience of working students. We also offer classes on Saturdays and summer period.

2. Application Qualification

Individuals who do not hold Japanese citizenship and meet any of the eligibility criteria below by September 2026.

(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).

3. Application Guidance Website

https://exam.fujita-hu.ac.jp/gswe26eg/top.html

-Through the above URL, it enables you to review application procedures, download mandatory document templates, and create your "My Page."

-Please save your "My Page" login information (user ID and password). This login information will be required every time you access "My Page".

4. Preliminary Screening

Applicants intending to apply to our Graduate School based on qualification (2) or (3) are subject to take a preliminary screening. After obtaining an acknowledgement of the professor at the desired departments, please submit the PDF data of required documents via email within the preliminary Screening application period. The designated forms can be downloaded on the Application Guidance website.

Application Start	Application Deadline	Result Notification
January 13, 2026	January 16, 2026	January 23, 2026

Mandatory Documents

[1] Request Form for Preliminary Screening (designated form, A4 size)

[2] Curriculum Vitae (designated form, A4 size)

[3] Certificate or provisional certificate of degree or diploma*[1]

[4] Academic transcript*[1]

*[1]The date of issuance must be no earlier than April 2025.

[5] Photocopy of the qualifications and licenses related to work history

[6] Report on research achievements (designated form, A4 size) *[2]

*[2] Not required if there is no research achievements.

- If the certificates are not in English or Japanese, applicants must submit both originals and translations.
- If [3] or [4] cannot be issued, please submit a "Statement of Reasons for Inability to Issue a Certificate" prepared by the applicant's school of origin. (any format is acceptable)
- All the necessary documents must arrive by the deadline.

●Sending Address for Document Submission

Submit the documents by email (PDF data) to:

Graduate School of Medical Sciences, Fujita Health University
E-mail: **hs-jimk2@fujita-hu.ac.jp**

Result Announcement of Preliminary Screening

Applicants will receive the result announcement of preliminary screening via e-mail. Successful applicants are then required to proceed with the Application Procedure for Entrance Examination on next page.

5. Application Procedure for Entrance Examination

Applicants must complete all the application procedure for entrance examination by the deadline. Follow the instruction below.

Application Start	Application Deadline	Examination Date	Examination Result Notification
January 26, 2026	February 6, 2026	February 16, 2026	February 24, 2026

1) Create "My Page"

Access the Application Guidance website and click Start Application Process to create "My Page" completing online registration.

https://exam.fujita-hu.ac.jp/gswe26eg/top.html

2) Payment of Application Fee

Application Fee	20,000 yen

- Application fee must be paid during the application period. Please note that the application fees will not be reimbursed for any reason.
- Please make a payment of application fee through international wire transfer. If you wish to use domestic wire transfer, ask us before transferring.
- Please do not remit US dollars or any other currencies. If you remit in currencies other than JPY, your application shall not be accepted.
- Note that all service charges/commission fees will be the applicant's responsibility.
- Please make sure that the remitter's name is the same as the applicant's name.
- Please make sure to submit a photocopy of the certificate of remittance (or payment receipt) issued by the bank along with other application documents.
- MEXT Scholarship candidates may be exempt from remitting the application fee.

Bank Name	Sumitomo Mitsui Banking Corporation
Branch Name	Nagoya-ekimae Branch
Bank Address	4-8-18 Meieki, Nakamura-ku, Nagoya-shi, Aichi, Japan. Postal Code: 450-0002
SWIFT code	SMBCJPJT
Beneficiary A/C No.	402-626775
Beneficiary Name Beneficiary Address	FUJITA-GAKUEN 1-98 Dengakugakubo, Kutsukake-cho, Toyoake, Aichi, Japan Postal Code: 470-1192
Beneficiary Tel. Number	+81-562-93-2000
Method of payment	Advise & Pay

3) Document Submission

Submit application documents both by e-mail (PDF data) and by post or in person (original, paper-based).

Mandatory Documents

[1] Application Confirmation Card (printed from "My Page")

[2] Curriculum Vitae (designated form, A4 size)

[3] Certificate or provisional certificate of degree or diploma*[1]

[4] Academic transcript*[1]

*[1]The date of issuance must be no earlier than April 2025.

[5] Statement of purpose (designated form, A4 size)

[6] Research planning (designated form, A4 size)

[7] Recommendation letter from 1 person (free form)

[8] Photocopy of Passport (ID page)

[9] Photocopy of the wire transfer record or payment receipt of application fee

[10] Pre-screening sheet for accepting foreigners *[2]

*[2] Ask your supervisor to make the document. [FHU Security Export Control Regulations]

Additional Documents

[11] Copy of the e-mail notification of the preliminary screening results*[3]

*[3] applicants subject to preliminary screening

[12] Document granting permission from the current workplace*[4]

*[4] applicants who are working students

- An 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.
- An Applicant who needs special arrangements for physical disabilities must inform us when applying.
- If any information in the application documents is found to be false, admission and/or enrollment may be revoked at any time.

●Address for Document Submission

Submit the documents by email (PDF data) and by post, or in person (original paper-based) to:

Graduate School of Medical Sciences, Fujita Health University

Address: 1st Floor, Fujita Health University Building #3

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

E-mail: **hs-jimk2@fujita-hu.ac.jp** Office Hours: 9:00–16:00 JST (weekdays)

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

6. Entrance Examination

The examination will be conducted online (ZOOM). Please ensure you have stable internet connection. The time schedule and the invitation link will be announced individually.

●Examination Contents

1. Oral interview
2. Presentation on your research plan

The examination results will be announced by email to each applicant.

7. Enrollment Procedures and Payment of School Fees

Each successful applicant will receive enrollment guidance materials with the notification of acceptance via email. Once receiving the materials, please follow the guidance.

School Fees

The enrollment and tuition fees are as follows:

Enrollment Fee	150,000 yen
Annual Tuition Fee	750,000 yen
Total	900,000 yen

Payment Schedule

The fees must be paid according to the following schedule:

Fee	Payment Deadline
Enrollment Fee (150,000 yen) Half of Annual Tuition Fee (375,000 yen)	March 2, 2026
Half of Annual Tuition Fee (375,000 yen)	August 31, 2026

- As a rule, the fees will not be refunded for any reason. However, tuition fee will be refunded if an enrollment cancellation request (free format) is submitted by 17:00 on August 31, 2026. Please note that the enrollment fee is non-refundable.

【Tuition Fee Reduction System】

Tuition Fee Reduction System is applicable for general students who fully engage in their own research under the supervising professor. Be sure that working students are not applicable.

If you wish to apply to the system, please submit the application form by the specific deadline. The application form will be enclosed with the admission permit.

Upon the approval of your application, the annual tuition fee of 750,000 yen will be reduced to 550,000 yen, which is a reduction of 200,000 yen.

【Grant and Scholarship Information】

Fujita Academy Grant

Fujita Academy offers its own academic support "Fujita Academy Grant" for prospective international students who are experiencing financial hardship that makes it difficult to start/continue their studies despite tremendous motivation to study at Fujita Health University (FHU). Recipients do not need to repay this grant.

Global Education and Research Grant

The instructor who is planning to accept international graduate students hires them as research assistants for their international research project and submits the application. The subsidiary amount is 50,000 yen per person per month, and the number of acceptances is 2 to 4 students each year.

Japanese Government Scholarship

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

For information on the scholarships, see the link below.

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

8. Personal Information Protection Policy

- 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.
- Collected personal information will be used only for procedures related to the admission process.
- Collected personal information 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

Graduate School of Medical Sciences, Fujita Health University

E-mail: hs-jimk2@fujita-hu.ac.jp

TEL: +81-562-93-2504 Office hour: 9:00-16:00 JST

● List of Major Subjects and Academic Advisors 2026

*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 ICHINO Naohiro TAKEMATSU Hiromu NARUSE Hiroyuki SUZUKI Koji MOURI Akihiro SHIOGAMA Kazuya WACHINO Junichi SUGIMOTO Keiko YAMAMOTO Naoki KOSEKI Takenao ISHIKAWA Hiroaki OSAKABE Keisuke HOSHI Masato MATSUURA Hideaki KUNISAWA Kazuo YOSHIMURA Aya HIGASHIMOTO Yuki	***ICHINO Naohiro*** 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. 1. Useful evaluation method for carcinogenesis using liver stiffness in chronic hepatitis B. 2. Development of biomarkers for pre-arteriosclerosis diagnosis to preemptive medicine. ***TAKEMATSU Hiromu*** 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. 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 ***NARUSE Hiroyuki*** We aim to elucidate the pathophysiology of various diseases using the clinical data and biomarkers, and apply it to clinical practice. 1. Study on the pathophysiology of cardiovascular disease using biomarkers. 2. Study on the pathophysiology of acute kidney injury using biomarkers. ***SUZUKI Koji*** Through molecular epidemiological study using various biomarkers, we will contribute to elucidating the mechanism of lifestyle related diseases and aim to establish disease prevention from a new perspective. 1. Molecular epidemiological study on prevention of lifestyle-related diseases 2. Large-scale cohort study for evaluation of cancer risk ***MOURI Akihiro*** 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. 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

Course Title	Course Aims and Research Subject
Graduate Thesis of Clinical Laboratory Sciences ICHINO Naohiro TAKEMATSU Hiromu NARUSE Hiroyuki SUZUKI Koji MOURI Akihiro SHIOGAMA Kazuya WACHINO Junichi SUGIMOTO Keiko YAMAMOTO Naoki KOSEKI Takenao ISHIKAWA Hiroaki OSAKABE Keisuke HOSHI Masato MATSUURA Hideaki KUNISAWA Kazuo YOSHIMURA Aya HIGASHIMOTO Yuki	***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. 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 ***WACHINO Junichi*** Regarding antibiotic-resistant bacteria isolated from clinical settings, our aim is to elucidate their mechanisms of antibiotic resistance at both molecular and atomic levels. Additionally, we seek to develop novel agents to combat infectious diseases caused by antibiotic-resistant bacteria. We also conduct a molecular epidemiological analysis of environmental antimicrobial-resistant bacteria and use the results as a basis for countermeasures. 1. Molecular characterization of antibiotic resistance mechanisms in bacteria using NGS and X-ray crystallography 2. Development of novel agents to inhibit antibiotic resistance mechanisms in bacteria 3. Molecular epidemiological research contributing to countermeasures against environmental antimicrobial-resistant bacteria ***SUGIMOTO Keiko*** Recently, the importance of echocardiographic data is increasing with the increase ofheart 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. 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 ***YAMAMOTO Naoki*** 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. 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. ***KOSEKI Takenao*** Through the planning, implementation, and publication of prospective clinical trials, the goal is to acquire clinical research coordination and project management skills. In parallel, the ability to conduct clinical research and develop scientific thinking will be fostered through studies utilizing medical information databases, electronic health records (EHR), and clinical trials related to pharmaceuticals, as outlined below: 1. Exploratory studies using adverse event databases to identify signals of adverse drug reactions, drug-drug interaction signals, risk factors, and potential preventive agents for adverse events. 2. Additional evaluations of the signals and candidate preventive agents identified in (1) using EHR data, followed by Proof-of-Concept validation through prospective clinical trials.

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Graduate Thesis of Clinical Laboratory Sciences ICHINO Naohiro TAKEMATSU Hiromu NARUSE Hiroyuki SUZUKI Koji MOURI Akihiro SHIOGAMA Kazuya WACHINO Junichi SUGIMOTO Keiko YAMAMOTO Naoki KOSEKI Takenao ISHIKAWA Hiroaki OSAKABE Keisuke HOSHI Masato MATSUURA Hideaki KUNISAWA Kazuo YOSHIMURA Aya HIGASHIMOTO Yuki	***ISHIKAWA Hiroaki*** We aim to elucidate the pathogenic mechanism of metabolic syndrome from the perspective of epigenetics and apply it to clinical examinations. We will also study the effects of functional foods on biometabolic function. 1. Epigenetic influences of fructose overdose on the next generation. 2. Analysis DNA methylation in metabolic syndrome. 3. Analysis of HDL miRNA in various diseases. ***OSAKABE Keisuke*** Research on the Clinical Utility of Non-Invasive Ultrasonography in Gastrointestinal Diseases. This study aims to explore the clinical utility of ultrasonography—a non-invasive imaging modality—in the evaluation of gastrointestinal diseases, with a particular focus on hepatobiliary and pancreatic diseases: 1. Investigation of non-invasive and quantitative assessment methods for hepatic fibrosis in patients with viral hepatitis. 2. Quantitative evaluation of hepatic fibrosis and ultrasound attenuation coefficient in metabolic dysfunction-associated liver disease (MASLD). 3. Hemodynamic analysis of hepatobiliary and pancreatic diseases using color Doppler and advanced microvascular imaging techniques. ***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. 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 ***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. 1. Mechanism of production of anti-erythrocyte antibodies 2. Development of new compatibility tests (blood transfusion, transplantation) 3. Investigate on HLA and disease sensitivities. 4. Analysis of bacterial vaginosis in cytology specimens ***KUNISAWA Kazuo*** We aim to elucidating the pathophysiological mechanisms underlying the interaction between the peripheral immune system, the gut microbiota, and the central nervous system ("periphery-to-brain communication"), targeting psychiatric and neurological disorders such as depression, multiple sclerosis, and schizophrenia. We conducts translational research that integrates clinical sample analysis with animal and cellular models, aiming to discover novel biomarkers and therapeutic targets. 1. Elucidating the pathophysiological interplay between the peripheral immune system, the gut microbiota, and psychiatric and neurological disorders 2. Identifying novel biomarkers and therapeutic targets for psychiatric and neurological disorders 3. Advancing translational research toward clinical application

Course Title	Course Aims and Research Subject
Graduate Thesis of Clinical Laboratory Sciences ICHINO Naohiro TAKEMATSU Hiromu NARUSE Hiroyuki SUZUKI Koji MOURI Akihiro SHIOGAMA Kazuya WACHINO Junichi SUGIMOTO Keiko YAMAMOTO Naoki KOSEKI Takenao ISHIKAWA Hiroaki OSAKABE Keisuke HOSHI Masato MATSUURA Hideaki KUNISAWA Kazuo YOSHIMURA Aya HIGASHIMOTO Yuki	***YOSHIMURA Aya*** Unmet medical need is a condition or disease for which there exists no effective therapy or satisfaction. We aim to clarify the pathology using disease model animals, verify candidate therapeutic agents, and introduce risk factors discovered through human genome analysis into mice (development of new disease models) in order to link these to clinical application. 1. Basic research on kidney diseases (diabetic kidney disease, polycystic kidney disease, etc.) 2. Basic research on cardiac diseases (hypertrophic cardiomyopathy, dilated cardiomyopathy, etc.) ***HIGASHIMOTO Yuki*** Conduct clinical and basic research related to viral infections in pediatrics. The aim is to analyze herpes viruses and rotaviruses, particularly herpes viruses, using molecular biological methods, and to develop new testing methods for rapid diagnosis and multiplexing. 1. Evaluate immunocompetence against varicella-zoster virus after routine varicella vaccination. 2. Molecular epidemiological analysis of varicella-zoster virus and rotavirus. 3. Elucidate the optimal host environment for enhancing the gut microbiome in children rotavirus-vaccinated children.

Department of Genetic Counseling

Course Title	Course Aims and Research Subject
Graduate Thesis of Genetic Counseling OHYE Tamae	To educate and enlighten the general public and medical community by identifying problems related to genetics and genetic medicine among medical professionals and the general public, accumulating evidence for solutions, and disseminating the evidence to society in an easy-to-understand manner. The students will learn the process of genetic counseling research by conducting a series of studies, including research design, ethical review, investigation, and analysis. In the process, students will learn how to effectively communicate with medical professionals and the general public, as well as the significance and importance of educational activities. Through the master's research, students will develop the qualities needed to become certified genetic counselors with the ability to think critically and insightfully. ***OHYE Tamae*** 1. Research on patient support using assistive robots 2. Analysis of the mechanisms involved in the occurrence of chromosomal structural abnormalities 3. Research on support for patients with genetic diseases and their families, as well as social support systems

Department of Assisted Reproductive Medicine

Course Title	Course Aims and Research Subject
Graduate Thesis of Assisted Reproductive Medicine NISHIO Eiji KOBAYASHI Tatsuya	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. ***NISHIO Eiji*** 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. ***KOBAYASHI Tatsuya*** 1. Development and validation of advanced embryo culture systems and diagnostic methodologies for infertility 2. Basic and clinical investigations focused on the promotion of blastocyst implantation 3. Fundamental research on the interplay between microbiota and reproductive function 4. Retrospective analysis utilizing clinical data from infertility treatments 5. Development of novel regenerative therapeutic strategies for age-related infertility

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 KASAI Satoshi SHIRAKAWA Seiji MUTO Koichi KOBAYASHI Masanao	***KOBAYASHI Shigeki*** To promote research that contributes to the creation of next-generation medical care forms. 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. ***MINAMI Kazuyuki*** In this laboratory, we will conduct research on measurement and simulation of exposure dose in the field of nuclear medicine. 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 ***TAKATSU Yasuo*** The objective of this study is to investigate biological systems using magnetic resonance imaging (MRI). By analyzing and evaluating MRI images, the research aims to provide valuable insights while considering imaging methodologies and their clinical applications. 1. Analysis of clinical images obtained through magnetic resonance imaging. 2. Investigation of MRI acquisition techniques and their clinical evaluation.

Course Title	Course Aims and Research Subject
Graduate Thesis of Radiological Sciences KOBAYASHI Shigeki MINAMI Kazuyuki TAKATSU Yasuo KASAI Satoshi SHIRAKAWA Seiji MUTO Koichi KOBAYASHI Masanao	***KASAI Satoshi*** 1. Research on AI-assisted surgical planning for glioma using preoperative brain MRI images. 2. Study on extracting diseases without morphological abnormalities from chest X-ray images using AI. 3. Research on AI-based breast cancer risk estimation. 4. Study on fetal anomaly monitoring through automated analysis of fetal heart rate and contraction charts. 5. Research on generative AI and explainable AI using natural language and medical image. ***SHIRAKAWA Seiji*** 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. 1. Monte Carlo simulation-based SPECT reconstruction 2. Study on image processing using deep learning ***MUTO Koichi*** Our research themes center on the application of medical informatics in radiology, encompassing a comprehensive range of topics from information system development for radiology departments to the standardization of radiology-related information including DICOM. Additionally, the laboratory addresses research challenges in the management and processing of big data associated with radiological medicine. 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 ***KOBAYASHI Masanao*** 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

Department of Medical Physics

Course Title	Course Aims and Research Subject
Graduate Thesis of Medical Physics ASADA Yasuki HAYASHI Naoki MATSUBARA Hiroaki KUNITOMO Hiroshi SHIMIZU Hidetoshi YASUI Keisuke	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's degree including the outcome in master course term. ***ASADA Yasuki*** 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 ***HAYASHI Naoki*** 1. Study on standard dosimetry for therapeutic radiation beams. 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 ***MATSUBARA Hiroaki*** 1. Study of malfunctions in cardiac implantable electronic devices caused by diagnostic and therapeutic radiation 2. Medical physics particularly based on nuclear physics ***KUNITOMO Hiroshi*** My laboratory focuses on 1. image quality metrics for digital radiography 2. procedural optimization of dose metrics based on image quality 3. image quality metrics for mammography and tomosynthesis 4. image quality metrics for fluoroscopy ***SHIMIZU Hidetoshi*** 1. Development of patient immobilization systems for radiotherapy 2. Development of quality assurance tools for radiation therapy equipment 3. Optimization of high-precision radiation treatment planning based on the latest clinical evidence 4. Study on tumor control, recurrence, and toxicity in radiotherapy ***YASUI Keisuke*** 1. Research on the Advancement and Standardization of High-Precision Dosimetry for Proton Beam Therapy 2. Development of a High-Precision Three-Dimensional Radiation Measurement System Utilizing 3D Printing Technology and Gel Dosimeters 3. Elucidation of Cellular Radiation Response Mechanisms Toward the Realization of Gene-Based Radiation Therapy 4. Performance Evaluation and Clinical Feasibility Assessment of Innovative Technologies in Treatment Planning Systems

3）Field of Biomedical Engineering

Department of Biomedical Engineering

Course Title	Course Aims and Research Subject
Graduate Thesis of Biomedical Engineering ITO Hiroyasu MIURA Yasuo FUJIGAKI Hidetsugu HORI Hideo KITAMOTO Norihisa IHIRA Masaru UMEZAWA Eizou HATTORI Hidekazu MIZUTANI Kenmei OHASHI Atsushi HIRANO Harutoyo	***ITO Hiroyasu*** We use immunological approaches to analyze the pathophysiology of cancer and develop new treatments for cancer using small animal models and human specimens. 1. Development of new cancer immunotherapy targeting immune checkpoint molecules 2. Development of cancer vaccine therapy using tumor-bearing animal models ***MIURA Yasuo*** 1. Development of Safe Blood Transfusion Practices 2. Pioneering the Basis for Cutting-edge Cell Therapy ***FUJIGAKI Hidetsugu*** 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 ***HORI Hideo*** 1. Research on kidney regeneration therapy using mesenchymal stromal cells activated by polymeric material powder 2. Research on regeneration therapy utilizing interaction between fiber materials and cells 3. Research on biocompatibility of hemodialysis 4. Development of evaluation system for hemodialysis using model animals ***KITAMOTO Norihisa*** Research on Minimizing the Physiological Impact of Cardiopulmonary Bypass. 1. Research on the Effects of Ultra-Low Priming Volume in Cardiopulmonary Bypass. 2. Research on the Impact of Maintaining Near-Normal Perfusion Flow Rates and Body Temperature During Cardiopulmonary Bypass. ***IHIRA Masaru*** 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 ***UMEZAWA Eizou*** 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 study diffusion MRI using physics, mathematics, and mathematical data science. 1. Study on diffusion MRI 2. Studies on mathematical and physical foundations of MRI, and new imaging and analysis methods based on them.

Course Title	Course Aims and Research Subject
Graduate Thesis of Biomedical Engineering ITO Hiroyasu MIURA Yasuo FUJIGAKI Hidetsugu HORI Hideo KITAMOTO Norihisa IHIRA Masaru UMEZAWA Eizou HATTORI Hidekazu MIZUTANI Kenmei OHASHI Atsushi HIRANO Harutoyo	***HATTORI Hidekazu*** The following studies focus on the effective utilization of artificial intelligence for medical information within the field of radiology: 1. The first is a study on the automatic detection of lesions in chest radiographs using deep learning. This research has the potential to change the way lung lesions are detected and operated. 2. The second is conducting research to ensure the safety of the use of contrast agents. This study is aimed at detecting imaging findings related to the side effects of contrast media. ***MIZUTANI Kenmei*** Research on paralysis recovery by stroke rehabilitation, elucidation of molecular mechanisms in the brain, and development of drug combination therapy 1. Analysis of plasticity change in the brain 2. Identification of functional molecules by proteome analysis and elucidation of molecular mechanisms of paralysis recovery 3. Development of drug therapy ***OHASHI Atsushi*** The blood components of patients undergoing extracorporeal circulation therapy are under excessive oxidative stress due to the inflammatory response. Our laboratory analyzes and evaluates oxidative stress markers for biocompatibility between medical materials and blood. We are also developing treatments that improve biocompatibility. 1. Study on the effect of apheresis therapy on living body 2. Study on the effect of redox state of body fluid components on somatic cells ***HIRANO Harutoyo*** 1. Research on the effects of low doses of radiation on vascular function 2. Research on the estimation of early arterial stiffness using machine learning. 3. Measurement of autonomic response to stimulation based on vascular viscoelasticity.