**For students admitted in 2022 and before**

**The Graduate School of Medical Sciences**

**Kumamoto University**

**(Doctoral Course)**

# Syllabus

## Compulsory subjects and Elective subjects

| | |
|---|---|
| A1 | Medical Informatics and Medical Ethics |
| B1 | Pathophysiology and structural biochemistry of biomolecules |
| B2 | Cell Biology |
| B3 | Hematopoietic and Immune System |
| B4 | Infection and Immune Control |
| B5 | Human brain functional science |
| B6 | Neuroscience |
| B7 | Developmental and Regenerative Medicine |
| B8 | Environmental and Sociomedical Sciences |
| C1 | Current Theory of Medical Diagnosis |
| C2 | Advanced therapeutics |
| C3 | Metabolic and Circulatory Regulations |
| C4 | Reproductive and Developmental Medicine |
| C5 | Advances in Oncologic Medicine |
| C6 | The Forefront of Clinical Oncology |
| C7 | Restorative Medicine |
| C8 | Cancer therapeutics |
| C9 | Paliative Care |
| C10 | The Theory of Clinical Research |
| C11 | Training of biostatistics in clinical study |
| C12 | Overview of clilnical study |
| D1 | Medical and Life science Seminar |
| D2 | Learning from Experienced Doctors Seminar |
| D3 | Medicine and Life Science Training |
| D5 | Translational Research Seminar |

**Jissen Timetable code**

## Course Work subject

Medical Experiment Course

## Developmental Biology and Regenerative Medicine

E1 Special Lecture "Tokuron" on Developmental Biology and Regenerative Medicine I

E2 Special Lecture "Tokuron" on Developmental Biology and Regenerative Medicine II

E3 Special Lecture "Tokuron" on Transplantation immunology

E4 Special Lecture "Tokuron" on Bioethics

Practice "Enshuu" on Developmental Biology and Regenerative Medicine I

Practice "Enshuu" on Developmental Biology and Regenerative Medicine II

Practice "Enshuu" on Developmental Biology and Regenerative Medicine III

Practical Training “Jisshuu" on Developmental Biology and Regenerative Medicine

## Educational Program for Advanced Research in Infectious Diseases and AIDS

F1 Special Lecture I on Infectious Diseases and AIDS

F2 Special Lecture II on Infectious Diseases and AIDS

Training I on Infectious Diseases and AIDS

Training II on Infectious Diseases and AIDS

Practice I on Infectious Diseases and AIDS

Practice II on Infectious Diseases and AIDS

Practice III on Infectious Diseases and AIDS

Practice IV on Infectious Diseases and AIDS

Research on Infectious Diseases and AIDS

Special Research I on Infectious Diseases and AIDS

Special Research II on Infectious Diseases and AIDS

## Endocrinology and Metabolism Course

Practical Training of Metabolic Medicine

## Educational Program for extenstion of healty life expectacy

G1 Special Lecture I on CMHA

G2 Special Lecture II on CMHA

Special Lecture on Bioethics

Special Practice

Practice I on CMHA

Practice II on CMHA

Practice III on CMHA

# Compulsory subjects and Elective subjects

A1・B1～B8・C1～C12

D1～D3・D5

Jissen Timetable code

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-000-81-2 | 2023whole year | Graduate School of Medical Sciences (20010) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Medical Informatics and Medical Ethics (For students admitted in 2022 and before)(A1 Medical Informatics and Medical Ethics) | KADOOKA Yasuhiro, KASAOKA Shunji, NAKAMURA Taishi, USUKU Koichiro |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ・・・・25% 2.Profound inter-disciplinary knowledge ・・・・25% 3.Global perspective and ability to take initiative action ・・・・25% 4.Social leadership drive ・・・・25% |

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|---|---|
| Type of Class(授業の形態) | Lecture and Seminar |
| Teaching Method(授業の方法) | The course is provided by lecture and discussion or e-Learning using the moodle or CITI Japan. |
| Course Goals(授業の目的) | Medical Informatics and Medical Ethics aims at proper management of health information and ethical problems arose from medical practice. In this course, you learn basic concepts used in this filed, including electronic health records, protection of computer-processed personal data, health care system in Japan and other countries, evaluation of medical care and DPC, problems of abortion, euthanasia and death with dignity, informed consent, principle of ethics. This course serves as introductory for all students as you obtain essential knowledge on medical informatics and medical ethics, and emergency medicine. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>To be able to handle or manage health information and ethical problems arose from medical practice.<br>【C level (C水準)】 |
| Course Outline(授業の概要) | In order to explain basic principles of medical informatics and medical ethics, it is discussed how the problems are managed. Basic concepts are introduced. More specifically, you are expected to understand the followings: (1) electronic health records; (2) protection of computer-processed personal data; (3) information literacy; (4) ethical issues at the beginning of life; (5) ethical issues at the end of life; (6) informed consent, privacy and principle of ethics, (7) research, high technology medicine and ELSIs, (8) emergency medical service system and (9)disaster medicine.<br>Participants are requested to learn medical ethics through e-learning system offered by the project of Collaborative Institutional Training Initiative (CITI) Japan, or submit a short comment on some lectures, which will be helpful to provide positive feed back to the next session. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Yasuhiro Kadooka 【eEJ-0】<br>Class Orientation and eAPRIN | Introduction and orientation of this course<br>Responsible Conduct of Research_RCR<br>Research Misconduct_RCR |
| 2 | | eAPRIN 【eEJ-0】 | Data Handling_RCR / Rules for Collaborative Research_RCR /<br>Conflicts of Interest_RCR |
| 3 | | eAPRIN 【eEJ-0】 | Authorship_RCR / Plagiarism(Biomedical)_RCR / Communicating Information to the Public_RCR |
| 4 | | eAPRIN 【eEJ-0】 | Peer Review(Biomedical)_RCR / Mentoring_RCR / Managing Public Research Funds_RCR |
| 5 | | eAPRIN 【eEJ-0】 | The History and Principles of Bioethics, and the Development of Its Rules_HSR / Review by an Institutional Review Board (IRB)_HSR / Handling Personal Information in Research_HSR |
| 6 | | eAPRIN 【eEJ-0】 | Genomic and Genetic Analysis Studies in Human Populations_HSR / Group Harm Arising from Research_HSR /<br>Informed Consent in Research_HSR |
| 7 | | eAPRIN 【eEJ-0】 | Research Subjects Who Merit Special Considerations_HSR /<br>Records-Based Research_HSR / Social and Behavioral Research for Biomedical Researchers_HSR |
| 8 | | eAPRIN 【eEJ-0】 | International Studies_HSR / The Ethics of Pluripotent Stem Cell Research I_HSR / The Ethics of Pluripotent Stem Cell Research II_HSR |
| 9 | | eAPRIN 【eEJ-0】 | Digest: Human Subjects Research_HSR / Care and Use of Laboratory Animals Module 1 Basic Knowledge of Animal Experiments_ACU / Care and Use of Laboratory Animals Module 2 What You Should Consider When Conducting Animal Experiments_ACU |
| 10 | | Taishi Nakamura and Koichiro Usuku 【eJ-0】 | Health care system in Japan and in the world |
| 11 | | Taishi Nakamura and Koichiro Usuku 【eEJ-0】 | Future prospects of Electronic medical records, Clinical research and data ware house |
| 12 | | Shunji Kasaoka 【eE-0】【eJ-0】 | Emergency Medical Service System, Post-Cardiac Arrest Syndrome |
| 13 | | Shunji Kasaoka 【eE-0】【eJ-0】 | Disaster Medicine, Triage |
| 14 | | Yasuhiro Kadooka【eE-0】【eJ-0】 | Step up Lecture for Research Ethics (1) |
| 15 | | Yasuhiro Kadooka【eE-0】【eJ-0】 | Step up Lecture for Research Ethics (2) |
| Estimated out-of-class study time | | This subject requires 90 hours of study, and the class is 30 hours. Therefore pre- and post-study on tasks equivalent to 60 hours is necessary to deepen the understanding of the class. | |

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| Required Textbook(テキスト) | Textbooks are not specified, and handouts will be distributed by the moodle system. |
| Reading List(参考文献) | Provided in the lectures. |
| Enrollment Conditions(履修条件) | No prerequisite. |
| Assessment Methods and Criteria(評価方法・基準) | Grading will be based on active class participation, paper summaries, and the final report. Grading will be based on the student's understanding of the course subject matter. The students' understanding will be evaluated on the basis of papers and questions related to the topics dealt with in class to be scored from grade 1 to 5. Final grades will be based on the average score of the papers and quizzes as well as participation in class discussions. |
| Language Used in Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-001-79-2 | 2023whole year | Graduate School of Medical Sciences (20020) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Pathophysiology and Structural Biochemis (For students admitted in 2022 and before)(B1) | BABA Masaya, YAMAGATA Kazuya, YAMANAKA Kunitoshi, ARIMA Yuichiro, MIHARADA Kenichi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥30% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥30% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint will be used in the lectures, and active participation in the discussion is encouraged. |
| Course Goals(授業の目的) | (1)To understand the pathophysiology of hypertension, cardiac hypertrophy, and atherosclerosis, and the therapeutic strategy of these cardiovascular diseases.<br>(2)To understand the basic knowledge of glucose/lipid metabolism and its dysregulation in diabetes mellitus, metabolic syndrome, and lipid metabolism disorder.<br>(3) Molecular basis, various cellular functions, and roles of ATPases, especially AAA family proteins, in human diseases will be learnt.<br>(4) To understand the mechanisms for protein quality control in cells and its implications in diseases<br>(5) To understand the role of hypoxia signaling pathway, mTOR signaling pathway and metabolite signaling in diseases |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>To understand the detailed findings of the structure, function, physiological role, role in various diseases, and clinical application of biomolecule, and to be able to apply them to the study.<br><br>【C level (C水準)】<br>To understand the structure, function, physiological role, role in various diseases, and clinical application of biomolecule. |
| Course Outline(授業の概要) | (1) You will learn the mechanism for the regulation of oxidative stress and its signaling cascades. (2) You will learn fundamental metabolic pathways under normal conditions and its relationship to pathology. (3) Proteins are biopolymers containing functional motifs and domains. Molecular chaperones and ATP-dependent proteases are related to life of proteins and consist of several different types of ATPases. Their functions will be discussed from the point of view of ATPases. In particular, common molecular basis and various cellular functions of AAA family proteins will be discussed. In addition, human genetic diseases and developmental disorders of model animals caused by mutations in AAA family proteins will be described. (4) You will learn how quantity and quality of functional proteins is maintained at the desired levels, and molecular mechanisms of unfolded protein response. Furthermore,you will learn how its disruption is implicated in various diseases. (5)You will learn the role of hypoxia signaling pathway, mTOR signaling pathway and metabolite signaling in diseases |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | ARIMA Yuichiro 【eEJ-0】 | Pathophysiology of cardiovascular diseases (1) |
| 2 | | ARIMA Yuichiro 【eEJ-0】 | Pathophysiology of cardiovascular diseases (2) |
| 3 | | ARIMA Yuichiro 【eJ-0】 | Hypertension and hyperglycemia during pregnancy |
| 4 | | YAMAGATA Kazuya 【eEJ-0】 | Pathophysiology of glucose/lipid metabolism (1) |
| 5 | | YAMAGATA Kazuya 【eEJ-0】 | Pathophysiology of glucose/lipid metabolism (2) |
| 6 | | YAMAGATA Kazuya 【eEJ-0】 | Pathophysiology of glucose/lipid metabolism (3) |
| 7 | | YAMANAKA Kunitoshi【eEJ-0】 | ATPases related to life of proteins |
| 8 | | YAMANAKA Kunitoshi 【eEJ-0】 | Various functions of AAA proteins |
| 9 | | YAMANAKA Kunitoshi【eEJ-0】 | Human diseases caused by AAA proteins |
| 10 | | MIHARADA Kenichi 【eJ-0】 | Growth factors and receptors in cancer |
| 11 | | MIHARADA Kenichi 【eJ-0】 | Cell signaling in cancer |
| 12 | | MIHARADA Kenichi 【eJ-0】 | Molecular targeted therapy in cancer |
| 13 | | BABA Masaya【eJ-0】 | Hypoxia signaling pathway and disease |
| 14 | | BABA Masaya【eJ-0】 | mTOR signaling pathway and disease |
| 15 | | BABA Masaya【eJ-0】 | metabolite signaling and disease |

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|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Textbooks are not specified, and handouts will be distributed in some classes. |
| Reading List(参考文献) | “Harper's Illustrated Biochemistry” by Robert K. Murray, Daryl K. Granner, Victor W. Rodwell, The McGraw-Hill Companies, 2006<br>“Handbook of Lipoprotein Testing” by Nader Rifal et al., AACC Press, 2000 |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | The students' understanding will be evaluated comprehensively based on the quality of report. Students must select one area from all attended courses and submit its report to the Student Affairs Section. |

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| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-002-79-2 | 2023whole year | Graduate School of Medical Sciences (20030) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Cell Biology(B2) | IWAMOTO Kazuya, TOMIZAWA Kazuhito, BUNDO Miki, ONO Yusuke, TATEISHI Satoshi, NAKAO Mitsuyoshi, Hino Shinjirou, NAKACHI Yutaka |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥75% 2.Profound inter-disciplinary knowledge ‥‥20% 3.Global perspective and ability to take initiative action ‥‥5% |

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|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | Face-to face lecture & E-learning lecture |
| Course Goals(授業の目的) | The students understand the various biological phenomena such as development/regeneration, cancer, aging, psychiatric disorders, molecular genetics, and stem cells based on cellular functions. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>The students can understand the various biological phenomena including development/regeneration, cancer, aging, psychiatric disorders, molecular genetics, and stem cells at the molecular level. In addition, they can understand and discuss the latest topics.<br>【C level (C水準)】<br>The students can understand the various biological phenomena including development/regeneration, cancer, aging, psychiatric disorders, molecular genetics, and stem cells at the molecular level. |
| Course Outline(授業の概要) | The topics of this course include development/regeneration, cancer, aging, psychiatric disorders, molecular genetics, and stem cells. The teachers give lectures on basic knowledge and current status of each topic, based on their specialty. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Kazuhito Tomizawa【eE-0, eJ-0】 | Regulation in physiology and pathophysiology |
| 2 | | Kazuhito Tomizawa【eE-0, eJ-0】 | Regulation by protein phosphorylation |
| 3 | | Shinjiro Hino【eE-0, eJ-0】 | Cross talk between metabolism and epigenome |
| 4 | | Yusuke Ono【eE-0, eJ-0】 | Stem cells and tissue regeneration/adaptation I |
| 5 | | Yusuke Ono【eE-0, eJ-0】 | Stem cells and tissue regeneration/adaptation II |
| 6 | | Yutaka Nakachi【eE-0, eJ-0】 | Osteoblasts and Osteoclasts I |
| 7 | | Yutaka Nakachi【eE-0, eJ-0】 | Osteoblasts and Osteoclasts II |
| 8 | | Miki Bundo【eE-0, eJ-0】 | Single cell analysis of brain functions |
| 9 | | Mitsuyoshi Nakao【eJ-O, eE-O】 | Medical epigenetics I (General remarks) |
| 10 | | Mitsuyoshi Nakao【eJ-O, eE-O】 | Medical epigenetics II |
| 11 | | Kazuya Iwamoto【eE-０, eJ-0】 | Neuroepigenetics I |
| 12 | | Kazuya Iwamoto【eE-０, eJ-0】 | Neuroepigenetics II |
| 13 | | Satoshi Tateishi【eEJ-0】 | Cell growth and cell cycle |
| 14 | | Satoshi Tateishi【eEJ-0】 | About Mitosis and Meiosis |
| 15 | | Satoshi Tateishi【eEJ-0】 | DNA repair and recombination |

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| Estimated out-of-class study time | This course consists of content that requires 90 hours of study. Since the class is 30 hours, 60 hours of pre- and post-study (including assignments) is necessary to understand the class. |
| Required Textbook(テキスト) | Not specified. |
| Reading List(参考文献) | 「Pathophysiology of Disease: An Introduction to Clinical Medicine, 6th Edition」edited by Stephan J. McPhee and William F. Ganong, The McGraw-Hill Companies (2009)<br>「Developmental Biology, 10th Edition」edited by Scott F Bilbert. Sinauer Associates Inc. (2013)<br>「Essential Cell Biology, 4th edition」edited by Bruce Alberts et al. Garland Science, (2013)<br>「EPIGENETICS」edited by David Allis et al. Cold Spring Harbor Laboratory Press (2007) |
| Enrollment Conditions(履修条件) | Should have the basic knowledge of cell biology. |
| Assessment Methods and Criteria(評価方法・基準) | Grading will be based on the understanding of the course subject matter. The understanding will be evaluated on the basis of papers and quizzes related to the topics dealt with in class to be scored from 0 to 100. Final grades will be based on the average score of the papers and quizzes as well as participation in class discussions. |
| Language Used in Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-003-79-2 | 2023whole year | Graduate School of Medical Sciences (20040) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Hematopoietic and Immune Systems(B3 Hematopoietic and Immune Systems) | OKADA Seiji, OGUCHI Hiroto, SASHIDA Goro, SATO Yorifumi, OSHIUMI Hiroyuki, KOGA Saori, OGAWA Minetaro, IRIE Atsushi, SUZU Shinya, TAKIZAWA Hitoshi, NOMURA Takushi |

Goals with their ratio(学修成果とその割合)

1.Advanced expert knowledge, skill and research capability ‥‥35% 2.Profound inter-disciplinary knowledge ‥‥35% 3.Global perspective and ability to take initiative action ‥‥20% 4.Social leadership drive ‥‥10%

| | |
|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | Omnibus lecures. E-learning contents are available in some lectures in both English and Japanese. |
| Course Goals(授業の目的) | The goal of this lecture series is to understand the basis of hematopoietic and immune systems, and disruption of these systems (malignancy, immunodeficiency, and immune disorders). |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Understand the basics of hematopoietic and immune systems, their development, function, disruption, and related diseases and discuss about recent progress.<br>【C level (C水準)】<br>Understand the basics of hematopoietic and immune systems, their development, function, disruption, and related diseases. |
| Course Outline(授業の概要) | The aims of this lecture series are to understand the followings:<br>(1) The mechanisms how the homeostasis of hematopoietic system is maintained as a stem cell system,<br>(2) The origin of hematopoietic system and the mechanisms of development of hematopoietic stem cells,<br>(3) The animal model bearing human hematopoietic system and applications of this animal model,<br>(4) Aging and tumorigenesis of hematopoietic system,<br>(5) Cell-cell interaction in the immune system,<br>(6) The mechanism of antigen-recognition and the immune response |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Minetaro Ogawa 【eJ-0】 | Ontogeny of hematopoietic system-1 |
| 2 | | Minetaro Ogawa 【eJ-0】 | Ontogeny of hematopoietic system-2 |
| 3 | | Saori Koga【eJ-0】 | Ontogeny of hematopoietic system-３ |
| 4 | | Seiji Okada 【eJ-0,eE-0】 | Differentiation of immune cells |
| 5 | | Seiji Okada 【eJ-0,eE-0】 | Application of Humanized mice |
| 6 | | Goro Sashida 【eEJ-0】 | Molecular mechanism of myeloid malignancies |
| 7 | | Shinya Suzu 【eEJ-0】 | Regulation of Hematopoiesis |
| 8 | | Hitoshi Takizawa 【eE-0】 | Role of inflammation on hematopoiesis |
| 9 | | Yorifumi Sato 【eEJ-0】 | T-cell and retroviral infection |
| 10 | | Hiroto Ohguchi 【eEJ-0】 | Molecular pathogenesis of plasma cell neoplasm |
| 11 | | Hiroyuki Oshiumi 【eJ-0】 | Role of innate immune cells during viral infection |
| 12 | | Takushi Nomura【eEJ-0】 | Flow cytometric analysis for T-cells |
| 13 | | Hiroyuki Oshiumi 【eJ-0】 | Development and function of innate lymphoid cells |
| 14 | | Takushi Nomura 【eEJ-0】 | T-cell responses in SARS-CoV-2 infection |
| 15 | | Atsushi Irie 【eJ-0】 | B cell development and function |

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|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Textbooks are not specified, and handouts will be distributed. |
| Reading List(参考文献) | ・"The Immune System" by Peter Parham. Garland Publishing Inc. New York and London, 2007<br>・ "Janeway’s Immunobiology Seventh Edition" by Kenneth Murphy, Paul Travers, Mark Walport. Garland Science, Taylor & Francis Group LLC. New York and Abingdon, 2008.・The Immune System, 4th Edition [Peter Parham] Garland Science<br>・WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues. WHO, 2017.<br>・The Science of Stem Cells. Jonathan M. W. Slack. Wiley Blackwell, 2018<br>・Williams Hematology, 9th ed. MCGRAW-HILL EDUCATION. 2016 |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Achievement of the Objectives will be evaluated by active class participation and the reports, of which the theme will be specified after the lectures. Grading will be based on the student's understanding of the course subject matter. The students' understanding will be evaluated on the basis of the reports and brief examinations. Final grades will be based on the average of the best 10 scores of the reports and brief examinations as well as the participation in class discussions. |
| Language Used in Instruction(使用言語) | English |

| | |
|---|---|
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-004-99-2 | 2023whole year | Graduate School of Medical Sciences (20050) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Infection and Immune Control(B4 Infection and Immune Control) | SATO Yorifumi, KUWATA Takeo, IKEDA Masanori, KUBOTA Ryuji, OKADA Seiji, OSHIUMI Hiroyuki, MATSUI Hirotaka, MOTOZONO Chihiro, MATSUOKA Masao, SAWA Tomohiro, Maeda Yousuke, SUZU Shinya, NAKATA Hirotomo, IKEDA Terumasa, TANAKA Yasuhito |

Goals with their ratio(学修成果とその割合)

1.Advanced expert knowledge, skill and research capability ・・・・30% 2.Profound inter-disciplinary knowledge ・・・・30% 3.Global perspective and ability to take initiative action ・・・・20% 4.Social leadership drive ・・・・20%

| | |
|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint will be used in the lectures, and active participation in the discussion is encouraged. Extra classes or video lectures are considered for those who are regularly absent for unavoidable reasons. (Before starting this course students will be informed of the individual lecture style of instructors in detail. ) |
| Course Goals(授業の目的) | The aim of this lecture series “Special Lecture I on Infectious Diseases and AIDS” is to learn following topics important for basic and clinical research of infectious diseases: (1) interaction between pathogen and host response, (2) molecular pathogenesis of viral infection, (3) immune control and vaccine research, (4) management of nosocomial/opportunistic infection, (5) diagnosis and treatment of emerging/re-emerging infectious diseases, (6) pathogenesis and treatment of infectious diseases. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students will learn following topics important for basic and clinical research of infectious diseases. Students will learn following topics important for basic and clinical research of infectious diseases. (1) interaction between pathogen and host response,(2) molecular pathogenesis of viral infection, (3) immune control and vaccine research, (4) management of nosocomial/opportunistic infection, (5) diagnosis and treatment of emerging/re-emerging infectious diseases, (6) Pathogenesis and treatment of HIV-1 infection.<br>【C level (C水準)】<br>Understanding for the following points.<br>(1) interaction between pathogen and host response<br>(2) molecular pathogenesis of viral infection<br>(3) immune control and vaccine research<br>(4) management of nosocomial/opportunistic infection<br>(5) diagnosis and treatment of emerging/re-emerging infectious diseases<br>(6) Pathogenesis and treatment of HIV-1 infection |
| Course Outline(授業の概要) | The course addresses the introduction (bacteriology, virology) and particulars of various pathogenic organisms (including gram-positive and negative bacteria, a DNA or RNA viruses) focusing on topics of pathogenesis, control and prevention of infectious diseases and emerging and reemerging infectious diseases. The course addresses protective immunity of host against infectious diseases including HIV-1 infection. Especially, recent topics such as the mechanism of T-cell recognition of the viral antigens, differentiation of immune cells from hematopoietic stem cells and the strategy for the development of effective vaccine against HIV-1 infection will be discussed. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Terumasa Ikeda【eE-O】 | Retrovirus life cycle |
| 2 | | Tomohiro Sawa【eE-O】 | Bacterial infection and pathogenesis |
| 3 | | Hiroyuki Oshiumi 【eE-O】 | Innate immune responses to pathogens |
| 4 | | Chihiro Motozono【eE-O】 | Cellular immune responses to pathogens |
| 5 | | Takeo Kuwata 【eE-O】 | Humoral immune responses to pathogens |
| 6 | | Yosuke Maeda 【eE-O】 | Pathogenesis of Mycobacterium tuberculosis and HIV confection |
| 7 | | Masao Matsuoka 【eE-O】 | Emerging/re-emerging infectious diseases |
| 8 | | Shinya Suzu 【eE-O】 | Retroviruses-host interaction |
| 9 | | Yorifumi Sato【eE-O】 | Retroviral infections and latency |
| 10 | | Masanori Ikeda 【eE-O】 | Molecular pathogenesis of hepatitis viruses |
| 11 | | Yasuhito Tanaka【eE-O】 | Hepatitis viruses and Liver cancer |
| 12 | | Ryuji Kubota【eE-O】 | Virus-induced neurological diseases |
| 13 | | Seiji Okada 【eE-O】 | Animal model research in infectious diseases |
| 14 | | Hirotaka Matsui 【eE-O】 | Roles of laboratory medicine for infectious diseases |
| 15 | | Hirotomo Nakata【eE-O】 | Nosocomial/opportunistic infection |

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| Estimated out-of-class study time | ・This course consists of content that requires hours (90 hours) of study. Since the class is 30 hours (2h x 15 frames) , 60 hours of pre- and post-study (including assignments) is necessary to understand the class. It is necessary to deepen. |
| Required Textbook(テキスト) | Textbooks are not specified, and handouts will be distributed. |
| Reading List(参考文献) | “Atlas of AIDS” edited by Gerald L. Mandell and Donna Mildvan. Current Medicine, Inc. Philadelphia, 2001.<br>“Infectious Diseases and Medical Microbiology” 2nd Edition, Abraham I. Braude et al., W.B. Saunders Company |

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| Enrollment Conditions(履修条件) | Have basic knowledge concerning what is taught in this course. |
| Assessment Methods and Criteria(評価方法・基準) | This class consisted of a series of omnibus lectures by 15 lecturers as listed in the schedule. Evaluation will be done based on active class participation, examination test and/or report for subjects by each lecturer. In order to get credits students have to take more than 2/3 lectures. Grading will be based on the average of top 10 scores among ones obtained by the student. |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-005-79-2 | 2023whole year | Graduate School of Medical Sciences (20060) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Human Brain Functional Science (For students admitted in 2022 and before)(B5 Human brain function science) | SHIMAMURA Kenji, Boku Syuken, IWAMOTO Kazuya, BUNDO Miki, Sou Bunketsu, TAKEBAYASHI Minoru, FUJISE Noboru, ESUMI Shigeyuki, HASHIMOTO Mamoru |

Goals with their ratio(学修成果とその割合)

1.Advanced expert knowledge, skill and research capability ‥‥80% 2.Profound inter-disciplinary knowledge ‥‥19% 3.Global perspective and ability to take initiative action ‥‥1%

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| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint and/or OHP will be used in the lectures, and active participation in the discussion is encouraged. Extra classes or video lectures are considered for those who are regularly absent for unavoidable reasons. |
| Course Goals(授業の目的) | A highly complex structure, human brain is developed from a simple central nervous system (CNS) that detects environmental information and uses the information directly for its body response. Human brain achieved memory, cognition, spirit and identity in its structure by increasing number of neurons and number of subtypes of neurons. In this lecture series, ‘Human brain functional Science’, students will be able to understand how mental activity appears from ‘gene expression’, neuron electrical activity, information convergence and divergence in the neuronal circuit. Students will understand the mechanisms underlying brain function as well as mental and psychiatric disorders. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Fully understand the contents and points that the lecturers set.<br>【C level (C水準)】<br>Understand about 60% of the contents and points that the lecturers set. |
| Course Outline(授業の概要) | We will describe and discuss following issues: cellular and molecular mechanisms of induction of neural plate and regionalization, neural differentiation and process of morphogenesis, histogenesis, circuit formation, and synaptogenesis. You will learn how environmental information is conveyed to human brain region and processed. You will also learn genetic and neuronal bases of mental activity and disorders. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | SHIMAMURA 【eE-0,eJ-0】 | Neural induction |
| 2 | | SHIMAMURA 【eE-0,eJ-0】 | Regionalization of embryonic brain |
| 3 | | SHIMAMURA 【eE-0,eJ-0】 | Regionally distinct histogenesis in brain |
| 4 | | ESUMI 【eEJ-0】 | Neuronal diversity and network formation |
| 5 | | ESUMI 【eEJ-0】 | Neuronal network in the neocortex |
| 6 | | SONG 【eE-0,eJ-0】 | Action potential |
| 7 | | SONG 【eE-0,eJ-0】 | Synapse and synaptic transmission |
| 8 | | SONG 【eE-0,eJ-0】 | Neurotransmitter |
| 9 | | SONG 【eE-0,eJ-0】 | Synaptic plasticity |
| 10 | | FUJISE 【eE-0,eJ-0】 | Neurotransmitter and mental symptom |
| 11 | | IWAMOTO 【eE-0】 | Genetics and epigenetics of psychiatric disorders |
| 12 | | BUNDO 【eE-0】 | Somatic mutations and psychiatric disorders |
| 13 | | HASHIMOTO 【eEJ-0】 | Neural basis of dementia |
| 14 | | TAKEBAYASHI 【eJ-0】 | Multiple approaches to mental disorder |
| 15 | | BOKU 【eJ-0】 | Neural basis of mental disorder |

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| Estimated out-of-class study time | 60 hours |
| Required Textbook(テキスト) | Not specified. |
| Reading List(参考文献) | Not specified |
| Enrollment Conditions(履修条件) | attending 60% of lectures and taking short tests in each lecture |
| Assessment Methods and Criteria(評価方法・基準) | Rate of finished e-Learning.  Points earned by passing short examinations. |
| Language Used in Instruction(使用言語) | Japanese and English (e-learning contents are either in English, Japanese, or mixture of them.) |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English (e-learning contents are either in English or Japanese) |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-006-79-2 | 2023whole year | Graduate School of Medical Sciences (20070) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Neuroscience (For students admitted in 2022 and before)(B6) | FUKUDA Takaichi, MIZUNO Hidenobu, SHIODA Norifumi, ERA Takumi, ORITA Yorihisa, Itou Yasuhiro, HAMASAKI Tadashi, INOUE Toshihiro, TAKEMOTO Makoto, YAMASHITA Satoshi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥80% 2.Profound inter-disciplinary knowledge ‥‥20% |

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| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint will be used in the lectures. |
| Course Goals(授業の目的) | In this course, you learn structure and function of several brain regions, postnatal development of somatosensory cortex, malformation of the brain due to the abnormalities in development, pathophysiology in the sensory systems, and neurodegenerative disorders. Recent advances in the therapeutic approaches including regenerative medicine are discussed. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students can explain the structure and function of the central nervous system and its abnormalities, new therapeutic approaches to the neural disorders using stem cells and gene targeting, pathophysiology in the somatosensory, visual, and auditory systems and their treatments. Students can also find unresolved issues in the presented topics and explain their ideas to investigate the issues.<br>【C level (C水準)】<br>Students can explain the basic knowledge about the structure and function of the central nervous system and its abnormalities, new therapeutic approaches to the neural disorders using stem cells and gene targeting, pathophysiology in the somatosensory, visual, and auditory systems and their treatments. |
| Course Outline(授業の概要) | (1) general structure of the brain; (2) Structure and function of the neocortex and hippocampus; (3) `Postnatal development of somatosensory cortex; (4) Morphology and function of the visual cortex; (5) Morphology and function of the basal ganglia; (6) Neural crest cells and pluripotency; (7) Nerve growth factor and apoptosis; (8) Gene abnormality and the resultant congenital insensitivity to pain; (9) Deformity of central nervous system and treatment; (10) Pathophysiology and treatment of retinal diseases; (11) Glaucoma pathophysiology and treatment; (12) Hearing impairment and treatment; (13) Regenerative medicine for neurodegenerative diseases; (14) State-of-the-art therapies for Parkinson's diseases |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | FUKUDA Takaichi [eEJ-0] | General structure of the brain |
| 2 | | FUKUDA Takaichi [eEJ-0] | Structure and function of the neocortex and hippocampus |
| 3 | | MIZUNO Hidenobu [eEJ-0] | Postnatal development of the somatosensory forex |
| 4 | | FUKUDA Takaichi [eEJ-0] | Structure and function of the visual system |
| 5 | | FUKUDA Takaichi [eEJ-0] | Structure and function of the basal ganglia |
| 6 | | ERA Takumi [eJ-0,eE-0] | Development and differentiation of neural crest cell, pluripotency |
| 7 | | ERA Takumi [eJ-0,eE-0] | New medical application to diseases of the nervous system using stem cell |
| 8 | | TAKEMOTO Makoto [eE-0] | Learning, memory, and emotion |
| 9 | | SHIODA Norifumi [eE-0] | The potential of nucleic acid structures as a therapeutic target for neurological diseases |
| 10 | | HAMASAKI Tadashi [eEJ-0] | Deformity of central nervous system and treatment |
| 11 | | ITOU Yasuhiro [eE-0] | Pathology and treatment of retinal diseases |
| 12 | | INOUE Toshihiro [eE-0] | Glaucoma pathophysiology and therapy |
| 13 | | ORITA Yorihisa [eJ-0] | Olfaction impairment and the treatment |
| 14 | | YAMASHITA Satoshi [eE-0] | Regenerative medicine for neurodegenerative diseases |
| 15 | | YAMASHITA Satoshi [eE-0] | State-of-the-art therapies for Parkinson's diseases |

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|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | |
| Reading List(参考文献) | |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | The students' understanding will be evaluated on the basis of quizzes related to the topics dealt with in class to be scored from 0 to 100. Final grades will be based on the average of the 10 highest scores out of 15 quizzes. |
| Language Used in Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言 | Combination of Japanese and English |

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|---|---|
| 語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Applicable (Fourteen out of fifteen classes are lectured by teachers with practical work experience in clinical medicine.) |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-007-79-2 | 2023whole year | Graduate School of Medical Sciences (20080) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Developmental and Regenerative Medicine(B7) | NISHINAKAMURA Ryuichi, ISHIGURO Keiichiro, NAKAMURA Akira, ERA Takumi, FUKUDA Takaichi, ONO Yusuke, NIWA Hitoshi, ARAKI Masatake, ESUMI Shigeyuki, TAKEO Tooru, OKANO Masaki, SHINDO Asako, OKAE Hiroaki, KOBAYASHI Akio |

Goals with their ratio(学修成果とその割合)

1.Advanced expert knowledge, skill and research capability ‥‥50% 2.Profound inter-disciplinary knowledge ‥‥25% 3.Global perspective and ability to take initiative action ‥‥20% 4.Social leadership drive ‥‥5%

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|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint will be used in the lectures, and active participation in the discussion is encouraged. |
| Course Goals(授業の目的) | Developmental and regenerative medicine aims at curing diseases by revealing molecular mechanisms of organ development. In this course, you learn basic concepts and techniques used in this filed, including knockout mice, which have now become essential for any area of research. This course serves as introductory for those in the Developmental and Regenerative Researcher Program, and will also be useful for those in other programs, as you obtain essential knowledge on genetic engineering techniques. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Master basic concepts and techniques used in this filed, and is able to explain the disease mechanisms and treatments based on the knowledge.<br>【C level (C水準)】<br>Master basic concepts and techniques used in this filed, and is able to understand the disease mechanisms and treatments. |
| Course Outline(授業の概要) | (1) Establishment and application of stem cells including ES and iPS cells; (2) Reproductive engineering including in vitro fertilization, freezing of embryos and sperms, embryo transfer, intracytoplasmic sperm injection, and nuclear transfer; (3) Genome editing technology and knockout mice; (4) Maintenance and differentiation of stem cells; (5) Placental development; (6) Anatomy of each organ in the aspects of ontogeny and phylogeny; (7) Mechanisms of organ and tissue development including the kidney, liver, pancreas, muscle, and gonad; (8) Regenerating organs from stem cells |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Ryuichi Nishinakamura 【eE-0】 | Overview & Kidney development |
| 2 | | Toru Takeo【eE-0】 | Reproductive engineering |
| 3 | | Masatake Araki 【eEJ-0】 | Production of genome edited mouse line |
| 4 | | Hitoshi Niwa【eE-0】 | Molecular basis of embryonic stem cells I |
| 5 | | Hitoshi Niwa【eE-0】 | Molecular basis of embryonic stem cells II |
| 6 | | Takumi Era 【eE-0】 | iPS cells, their applications for the medicine |
| 7 | | Hiroaki Okae 【eE-0】 | Pregnancy in mammals |
| 8 | | Asako Shido 【eE-0】 | Embryogenesis and organ morphogenesis |
| 9 | | Takaichi Fukuda 【eE-0】 | Ontogeny and phylogeny |
| 10 | | Shigeyuki Esumi 【eE-0】 | Anatomy of digestive tracts and lung |
| 11 | | Akio Kobayashi 【eE-0】 | Development of the urogenital system |
| 12 | | Yusuke Ono【eE-0】 | Muscle development and regeneration |
| 13 | | Akira Nakamura 【eE-0】 | germ cell formation: preformation and epigenesis |
| 14 | | Keiichiro Ishiguro 【eE-0】 | germ cell development in mammals |
| 15 | | Masaki Okano【eE-0】 | Epigenetics in development |

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| Estimated out-of-class study time | 60 hrs |
| Required Textbook(テキスト) | |
| Reading List(参考文献) | ・ “Developmental Biology, 12th edition” by Barresi MJF& Gilbert S 2019.<br>・ “Essential Developmental Biology, 4th edition” by Slack JMW &Dale L.,Blackwell Publishing 2021<br>・ “Manipulating the Mouse Embryo: A Laboratory Manual, 4th edition” by Nagy A., Gertsenstein M., Vintersten K., Behringer R., Cold Spring Harbor Laboratory Press, 2014.<br>・ “Larsen’s Human Embryology, 5th edition”by Shoenwolf GC, Bleyl SB, Brauer PR, Francis-West PH. Churchill Livingstone, 2014. |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | The students' understanding will be evaluated on the basis of papers and quizzes related to the topics dealt with in class to be scored from 0 to 100. Final grades will be based on the average score of the papers and quizzes, as well as the final report and active participation in class discussions. |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material | Combination of Japanese and English |

| | |
|---|---|
| Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-008-81-2 | 2023whole year | Graduate School of Medical Sciences (20090) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Environmental and Sociomedical Sciences(B8) | Nishitani Youko, Katou Takahiko, MATSUI Kunihiko, SOEJIMA Hirofumi, Gi Chiyounen, Oomori Hisamitsu, Lu Xi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥25% 2.Profound inter-disciplinary knowledge ‥‥25% 3.Global perspective and ability to take initiative action ‥‥10% 4.Social leadership drive ‥‥40% |

| | |
|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint and/or OHP will be used in the lectures, and active participation in the discussion is encouraged. Extra classes or video lectures are considered for those who are regularly absent for unavoidable reasons. |
| Course Goals(授業の目的) | The purpose of this course is to develop the logic of the broad field of Social Medicine from the viewpoints of preventive and environmental medicine (hygiene), public health, health medicine, forensic medicine and neuropsychiatry. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Social Medicine is an important field of medical science in studying various aspects of the interaction between medicine and society in the human life cycle. The health of the humans is regulated in the ecosystem, and, as the medical social application, it is also supported by the comprehensive health and welfare system. In this course, students are expected to understand the relationship between the environment and health, the concept of total medical care service including disease prevention & health promotion, and individuals' basic human rights. Students will also comprehensively learn the role of medicine and law in maintaining social safety.<br>【C level (C水準)】 |
| Course Outline(授業の概要) | There will be practical lectures in the Department of preventive and environmental medicine (hygiene) on the structure of the environment, the relationship between people and the environment, environmental indices and evaluation, and the setting and maintenance of environmental standards, and lectures in the Department of Public Health on the concept of health and the construction of a healthy society based on preventive medicine and epidemiology. In the Department of Forensic Medicine, there will be general lectures on the purposes of forensic medicine, as well as the causes of the death and its classification from the medical, legal and social perspectives, and forensic medicine's contribution to society. In the Department of Clinical Behavioral Medicine, students will learn about the epidemiology of mental diseases and the relationship between life-events, social support, personality, recognition pattern, nurture experience and mental disease. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Takahiko Katoh 【eE-0, eJ-0】 | Meaning of social medicine |
| 2 | | Takahiko Katoh 【eE-0, eJ-0】 | Epidemiology |
| 3 | 06/16 | 5th period Hisamitsu Omori【eEJ-L】 | Medical Screening |
| 4 | 06/23 | 5th period Yoko Nishitani 【eE-0, eJ-L】 | Definition and purpose of forensic medicine |
| 5 | 06/30 | 5th period Hirofumi Soejima【eEJ-L】 | General Medicine: Atherosclerosis |
| 6 | 07/07 | 5th period Yoko Nishitani 【eE-0, eJ-L】 | Forensic medicine & forensic science |
| 7 | | Xi Lu 【eE-0】 | Medical Statistics |
| 8 | | Xi Lu【eE-0】 | Research Design of Epidemiology |
| 9 | 07/28 | 5th period Yoko Nishitani 【eE-0, eJ-L】 | Social aspect of human death (1) |
| 10 | 08/04 | 5th period Yoko Nishitani 【eE-0, eJ-L】 | Social aspect of human death (2) |
| 11 | 08/25 | 5th period Hirofumi Soejima【eE-0, eJ-L】 | Blood Coagulation and Fibriolysis |
| 12 | 09/01 | 5th period Hirofumi Soejima【eE-0, eJ-L】 | Lifestyle and Coronary Artery Disease |
| 13 | 09/08 | 5th period Chang-Nian Wei 【eE-L, eJ-0】 | Environment-human system |
| 14 | 09/15 | 5th period Chang-Nian Wei【eE-L, eJ-0】 | Environmental indices and evaluation |
| 15 | 09/22 | 5th period Kunihiko Matsui【eJ-L】 | General Medicine: Clinical studies, interpretation for results |

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|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Textbooks are not specified, and handouts will be distributed. |
| Reading List(参考文献) | ・ "Public Health & Preventive Medicine" by Maxy-Rosenan-Last: (14 edit) Appleton & Lange. 1998,<br>・ "Forensic Pathology" by Bernard Knight, 2nded.., Arnold, London, Sydney and Auckland, 1996. |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Grading will be based on active class participation, paper summaries,<br>and the final report. Grading will be based on the student's understanding of the course subject matter. The students' understanding will be evaluated on the basis of papers and quizzes related to the topics dealt with in class to be scored from 0 to 100.<br>Final grades will be based on the average score of the papers and quizzes as well as participation in class discussions |
| Language Used in Instruction(使用言語) | Japanese and English |

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|---|---|
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Applicable (A teacher with practical work experience in Public Health, Regional Medicine, or Forensic Medicine will lecture.) |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-009-82-2 | 2023whole year | Graduate School of Medical Sciences (20100) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Current Theory of Medical Diagnosis(C1 Current Theory of Medical Diagnosis) | HIRAI Toshinori, MATSUI Hirotaka, MIKAMI Yoshiki, KOJIMA Akihiro, KOMOHARA Yoshihiro, UEDA Mitsuharu, Jiyouno Hirofumi, Misumi Youhei, BABA Masaya, SATO Yonosuke |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥45% 2.Profound inter-disciplinary knowledge ‥‥45% 3.Global perspective and ability to take initiative action ‥‥5% 4.Social leadership drive ‥‥5% |

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|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint files will be used for giving the lectures, and active participation in the discussion is encouraged. Extra classes or video lectures will be considered for those who are regularly absent due to unavoidable reasons. |
| Course Goals(授業の目的) | The lecture series “Current Theory of Medical Diagnosis” afford fundamental and current general views of modern medical diagnostic techniques and their application in practical medicine and medical research. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students are expected to understand cutting-edge advanced method for disease diagnosis. Students are also expected to find devise a method to discover unsolved problems and lead to solutions.<br><br>【C level (C水準)】<br>Students are also expected to find devise a method to discover unsolved problems and lead to solutions. |
| Course Outline(授業の概要) | In the field of Pathology, current morphology and its application for cancer diagnosis will be introduced. In addition, molecular approaches for a research in cancer cell differentiation, proliferation and invasion, blood coagulation system and immune reaction (especially on macrophage) will be shown.<br>In the field of Laboratory Medicine, modern technique and method for the detection of gene mutations will be shown and discussed.<br>In the field of Radiology, detailed implication of CT and MRI images and their application for researchers will be presented.<br>In the field of Isotope Science, principles of RI tracer methods that are able to detect RI distribution in functional assay as well as in animals including human body will be presented.<br>In the field of Neurology, recent advances in the neurological diagnosis will be given to the students. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Sato Y (Pathol Exp Med) 【eJ-0】 | Tumor diagnosis with immunohistochemistry. |
| 2 | | Baba M (Pathol Exp Med) 【eJ-0】 | Molecular pathological diagnosis of malignancies. |
| 3 | | Mikami Y (Pathol Diagnosis)【eJ-0】 | Histopathologic approach to diagnostic oncology: a logic for interpretation of morphology. |
| 4 | | Ueda M (Neurology) 【eJ-L0】 | Recent advances in diagnostic methods for intractable neurological diseases |
| 5 | | Misumi Y (Neurology) 【eJ-0】 | Advanced diagnostic approaches for rare and inherited diseases |
| 6 | | Komohara Y (Cell Pathol) 【eJ-0】 | Roles of macrophages in tumor microenvironment |
| 7 | | Komohara Y (Cell Pathol) 【eJ-0】 | Roles of macrophages in cancer immunology |
| 8 | | Matsui H(Laboratory Medicine) 【eJ-0】 | Application of next generation sequencing for clinical diagnosis |
| 9 | | Matsui H (Laboratory Medicine ) 【eJ-0】 | Practice and prospect of clinical diagnostic medicine |
| 10 | | Jono H (Clin Pharm Sci) 【eJ-0】 | Drug discovery research based on basic and clinical evidence |
| 11 | | Hirai T (Diag Radiology) 【eJ-0】 | Forefront of MR imaging and research approaches |
| 12 | | Hirai T (Diag Radiology) 【eJ-0】 | Forefront of CT imaging and research approaches |
| 13 | | Kojima A (RI Science) 【eJ-0】 | RI tracer methods: basics and application of radioisotope measurements. |
| 14 | | Kojima A (RI Science) 【eJ-0】 | RI molecular imaging. |
| 15 | 03/08 | 4th period Hirai T (Diag Radiology) | Makeup class for students who did not attend previous classes |

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| Estimated out-of-class study time | This course consists of content that requires 90 hours of study. Since the classes will be 30 hours long (2 hours x 15 sessions), 60 hours worth of prior and post-work studies (including assignments, etc.) will be required to deeply understand the classes. |
| Required Textbook(テキスト) | Each instructor will specify as needed. |
| Reading List(参考文献) | Each instructor will specify as needed. |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Grading will be based on active class participation, paper summaries and the final reports. Even if the attendance in this course is very poor or none, the students can obtain credits for this course through e-learning system that are prepared in some classes, or a supplemental class. Grading will be based on the student's understanding of the course subject matter. The students' understanding will be evaluated on the basis of papers and quizzes related to the topics and be scored from 0 to 100. |

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| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English (We will use documents and materials in English whenever possible.) |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Applicable (Faculty members engaged in the clinical practice of Pathology, Radiology and Laboratory medicine will lecture disease diagnostics from the basics to actual levels in an omnibus style.) |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-010-82-2 | 2023whole year | Graduate School of Medical Sciences (20110) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Advanced Therapeutics(C2) | SAKAGAMI Takuro, Kanba Tomomi, Murakami Daizou, MIYAMARU Satoru, FUKUSHIMA Satoshi, NAOE Hideaki, ISE Momoko, Hibi Taizou, TANAKA Yasuhito |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥80% 2.Profound inter-disciplinary knowledge ‥‥20% |

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|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint will be used in the lectures, and active participation in the discussion is encouraged. |
| Course Goals(授業の目的) | Basic concept of molecular targeting and clinical application using antibody, peptide will be reviewed. Because the relation between immune disorders and pathogenesis has been revealed, immune modulation serve as a therapeutic strategy for viral infectious diseases, auto-immune diseases, and cancer. This course provides a rationale, current evaluation and problems of immune-modulation therapy. On the other hand, this course will introduce the basic research and progress to the establishment of organ transplantation, cell transplantation and artificial organs, and also focus on the current efficacy and limitations. In addition, progress in endoscopic treatments will be reviewed. Future therapeutic strategies wil be also discussed. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>To understand a rationale, current evaluation and problems of immune-modulation therapy. In addition, to comprehend the basic research and progress to the establishment of organ transplantation, cell transplantation and artificial organs, and also to know the current efficacy and limitations. Finally, progress in endoscopic treatments will be recognized.<br>【C level (C水準)】 |
| Course Outline(授業の概要) | Recent advances in molecular biology and medical engineering provide a new era in the treatment of various diseases. In this regard, the molecules, which play central roles in the pathogenesis of chronic inflammation and carcinogenesis, have been identified, leading to the development of molecular targeting therapies. In addition, it has been described how immune systems of the body contribute to pathogenesis of diseases, and immune-modulation has been employed in the clinical setting. Furthermore, organ transplantation, cell transplantation and artificial organs have been introduced to complement organ failures. On the other hand, progresses in endoscopic machinery have established endoscopic treatment, and serve as less invasive treatments. This course will focus on progress in treatments and future orientation of medicine. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Naoe Hideaki 【eJ-0】 | Progress in endoscopic treatment and diagnosis of gastrointestinal diseases |
| 2 | | Tanaka Yasuhito 【eJ-0】 | State-of the art in diagnosis and treatment of hepatic disease |
| 3 | | Tanaka Yasuhito 【eJ-0】 | Molecular targeting therapy in gastrointestinal & hepatic diseases |
| 4 | | Sakagami Takuro 【eJ-0】 | Progress in diagnosis and treatment of respiratory diseases |
| 5 | | Sakagami Takuro 【eJ-0】 | Topics of allergic respiratory diseases |
| 6 | | Sakagami Takuro 【eJ-0】 | Topics of diagnosis and treatment of lung cancer |
| 7 | | Miyamaru Satoru【eJ-0】 | The diagnosis and management of dysphagia |
| 8 | | Ise Momoko 【eJ-0】 | Treatment using cochlear implant for severe sensorineural hearing loss |
| 9 | | Murakami Daizo 【eJ-0】 | Endoscopic treatment of head and neck diseases |
| 10 | | Hibi Taizo 【eJ-0】 | Organ transplantation; the past and the present |
| 11 | | Hibi Taizo 【eJ-0】 | Liver transplantation; basis and clinical application |
| 12 | | Kamba Tomomi 【eJ-0】 | Current therapeutic strategy for urogenital cancers |
| 13 | | Kamba Tomomi 【e-0】 | Endoscopic treatments for urinary diseases |
| 14 | | Fukushima Satoshi 【eJ-0】 | Molecular targeting therapy for autoimmune diseases in skin |
| 15 | | Fukushima Satoshi 【eJ-0】 | Immune therapy in skin cancer |

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| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Textbooks are not specified, and handouts will be distributed. |
| Reading List(参考文献) | 1) Molecular Cell Biology, sixth edition, by Lodish H, et al. W.H.Freeman, 2008<br>2) Carithers RL Jr. Liver transplantation. American Association for the Study of Liver Diseases. Liver Transpl 2000 Jan;6 (1):122-35. |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Grading will be based on active class participation, understanding, paper summaries, and the final report.The students' understanding will be evaluated on the basis of papers and quizzes related to the topics dealt with in |

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| Assessment Methods and Criteria(評価方法・基準) | class to be scored from 0 to 100.<br>Final grades will be based on the average score of the papers and quizzes as well as participation in class discussions |
| Textbook/Material Language(教科書・資料の言語) | Japanese |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-011-82-2 | 2023whole year | Graduate School of Medical Sciences (20120) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Metabolic and Circulatory Regulations(C3) | Mukouyama Masashi, GOTOH Tomomi, SUGITA Michiko, Oike Yuuichi, ADACHI Masataka, TSUJITA Kenichi, YAMAMOTO Eiichirou, KUWABARA Takashige, HIRATA Naoyuki, KONDO Tatsuya, Matsumura Takeshi |

Goals with their ratio(学修成果とその割合)

1.Advanced expert knowledge, skill and research capability ‥‥30% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥30% 4.Social leadership drive ‥‥10%

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|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint/Zoom will be used in the lectures, and active participation in the discussion is encouraged. Extra classes and e-learning are considered for those who are not able to attend regular classes for unavoidable reasons.<br>Please be sure to refer to the syllabus change as it will be announced on the website of the Graduate school of Medical Sciences. |
| Course Goals(授業の目的) | Metabolic and Circulatory Regulations aim at learning the following items: (1) the pathogenesis of acute coronary syndrome and related factors, (2) the molecular mechanisms and therapeutic strategies of chronic heart failure, (3) the pathogenesis of metabolic disorders including diabetes mellitus and diabetic vascular complications, and its therapeutic strategy, (4) the molecular mechanisms of actions and secretion of insulin, (5) the molecular mechanisms and therapeutic strategy for metabolic syndrome and the development of obesity, (6) the relation between the progression of atherosclerosis or obesity, and inflammatory cells, (7) the molecular basis of renal physiology, and the functional differentiation/regulation of each segment of the nephron, (8) the pathogenesis of major renal diseases and the underlying mechanisms causing the pathological conditions, (9) the influence and mechanisms of surgical stress to the metabolism and circulation, and the therapeutic strategy for controlling these influences. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>In this lecture, you are expected not only to learn the followings but also to apply them to research study or clinical activity:<br>1. Mechanisms of atherosclerosis evaluated by coronary imaging and the therapeutic strategies.<br>2. Basic mechanisms of myocardial ischemia/reperfusion injury and cardiac remodeling in experimental acute myocardial infarction.<br>3. Molecular mechanisms and therapeutic strategies of chronic heart failure;<br>4. Pathogenic mechanisms of diabetes mellitus, diabetic complications, and the actions and secretion of insulin;<br>5. Molecular mechanisms and therapeutic strategy for metabolic syndrome and obesity, one of the main pathogenesis of atherosclerotic diseases.<br>6. Molecular basis of water-electrolyte balance by channels and transporters, and the regulation along the nephron.<br>7. Regulation and dysregulation of renal blood flow and blood pressure, and the pathophysiological mechanisms of proteinuria and renal dysfunction.<br>8. Various influences of surgical stress (i.e. activation of the sympathetic nervous system, pain, inflammatory reactions, etc.) to the metabolism and circulation, and the therapeutic strategy based on understanding these influences.<br><br>【C level (C水準)】<br>You are required to roughly understand each item listed above; otherwise you are regarded not having reached to the level to apply them to research study or clinical activity. |
| Course Outline(授業の概要) | 1. Mechanisms of atherosclerosis evaluated by coronary imaging and the therapeutic strategies.<br>2. Basic mechanisms of myocardial ischemia/reperfusion injury and cardiac remodeling in experimental acute myocardial infarction.<br>3. Molecular mechanisms and therapeutic strategies of chronic heart failure;<br>4. Pathogenic mechanisms of diabetes mellitus, diabetic complications, and the actions and secretion of insulin;<br>5. Molecular mechanisms and therapeutic strategy for metabolic syndrome and obesity, one of the main pathogenesis of atherosclerotic diseases.<br>6. Molecular basis of water-electrolyte balance by channels and transporters, and the regulation along the nephron.<br>7. Regulation and dysregulation of renal blood flow and blood pressure, and the pathophysiological mechanisms of proteinuria and renal dysfunction.<br>8. Various influences of surgical stress (i.e. activation of the sympathetic nervous system, pain, inflammatory reactions, etc.) to the metabolism and circulation, and the therapeutic strategy based on understanding these influences. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Kenichi Matsushita 【eE-0】 | Mechanism of myocardial ischemia/reperfusion injury |
| 2 | 10/13 | Fri. 5th period Eiichiro Yamamoto【eE-L】 | Molecular mechanisms and therapeutic strategies of chronic heart failure |
| 3 | | Kenichi Tsujita【eE-0】 | Mechanisms of atherosclerosis and therapeutic strategies |
| 4 | | Michiko Sugita【eE-0】 | Types and influences of operative stress |
| 5 | | Tomomi Gotoh 【eE-0】 | NO and nitrogen metabolism disorders |
| 6 | | Tatsuya Kondo 【eJ-0】 | Insulin and its actions–their molecular basis |
| 7 | | Takeshi Matsumura 【eE-0】 | Diabetic complications and their therapeutic approaches |
| 8 | | Naoyuki Hirata【eE-0】 | Mechanisms and therapeutic strategies of perioperative organ injury |

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|---|---|---|---|
| 9 | | Naoyuki Hirata【eE-0】 | Mechanisms and therapeutic strategies of Postoperative cognitive decline |
| 10 | | Masataka Adachi【eE-0】 | Renal potassium handling |
| 11 | | Takashige Kuwabara 【eE-0】 | Structure and function of nephron |
| 12 | | Masashi Mukoyama【eE-0】 | Sodium and water handling by the kidney |
| 13 | | Tomomi Gotoh 【eE-0】 | ER stress-related diseases |
| 14 | | Takeshi Matsumura 【eE-0】 | Pathogenesis and therapies of metabolic diseases |
| 15 | | Yuichi Oike 【eE-0】 | Clarification of molecular and cellular mechanisms underlying aging and its associated diseases |

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| Estimated out-of-class study time | This course consists of contents which requires 90 hours of work.<br>As the total of in-class hours becomes 30 hours (two hours x15 classes), additional 60 hours of pre-post study including some task will be required in order to improve comprehension of the course. |
| Required Textbook(テキスト) | Textbooks are not specified, and handouts will be distributed. |
| Reading List(参考文献) | ・Braunwald’s Heart Disease: A Textbook of Cardiovascular Medicine, 12th edition, edited by Libby P, et al. Saunders, Philadelphia, 2021.<br>・Miller’s Anesthesia, 9th edition, edited by Miller RD. Elsevier Churchill Livingstone, Philadelphia, 2019.<br>・Brenner & Rector’s The Kidney, 11th edition, Elsevier, Philadelphia, 2020.<br>・Comprehensive Clinical Nephrology, 6th edition, Mosby, 2019. |
| Enrollment Conditions(履修条件) | no limitation |
| Assessment Methods and Criteria(評価方法・基準) | Grading will be based on active class participation, paper summaries, and the final report. Grading will be based on the student's understanding of the course subject matter. The students' understanding will be evaluated on the basis of papers and quizzes related to the topics dealt with in class to be scored from 0 to 100.<br>Final grades will be based on the average score of the papers and tests as well as participation in class discussions |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-012-82-2 | 2023whole year | Graduate School of Medical Sciences (20130) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Reproductive and Developmental Medicine(C４　Reproductive and Developmental Medicine) | NAKAMURA Kimitoshi, Hibi Taizou, KONDO Eiji, Ooba Takashi, NAKAZATO Hitoshi, MITSUBUCHI Hiroshi, Matsumoto Shirou, IWAI Masanori, SAITOU Fumitaka, YAMAGUCHI Munekage, OZASA Shirou, ISONO Kaori, ANAN Kotaro, SAWADA Takaaki |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥30% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥30% 4.Social leadership drive ‥‥10% |

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| Type of Class(授業の形態) | Other |
| Teaching Method(授業の方法) | ---------- |
| Course Goals(授業の目的) | The lecture of “Reproductive and developmental medicine” aims to understand followings: (1) Basic knowledge for physiology and pathology of human fertilization and pregnancy. (2) Medical interventions before and during pregnancy, and social issues related to these interventions. (3) Basic knowledge for physiology and pathology of development and growth of man. (4) Basic knowledge for disorders which affects children including genetic and neuromuscular diseases, pediatric surgery and organ transplantation. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>The participants will learn basic knowledge for developmental and growth medicine and issues of physiology, pathology, treatment, technology and ethical aspects in advanced medicine. They will also learn pregnancy, birth, newborn intensive care and assisted reproductive medicine, prenatal diagnosis and rare diseases, surgical diseases and organ transplantation.<br>【C level (C水準)】 |
| Course Outline(授業の概要) | This class will introduce the most recent and important progress in the field of reproductive and developmental medicine. The lecture related to pregnancy and delivery will discuss medical and social issues in addition to the physiology of reproductive system. We will discuss biological and medical aspect of the reproductive system, and social and ethical problems. The ethical problems of assisted fertilization including in vitro fertilization, ICSI (Intra Cytoplasmic Sperm Injection), oocyte donation, cryopreservation of embryos, cryopreservation of sperm will be discussed.<br>The class for neonatal medicine, we introduce principal physiology of newborn infants and various pathological conditions of this period. The participant will learn many different disorders. One of the important topics of this course is normal development of brain function during childhood. The normal development of young brain is supported by surrounding environment of children which included social conditions. The participant will also learn neonatal surgical disorders and abdomanal organ transplantation for children. We will discuss the social problems which affect healthy development of children in recent years. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | 10/05 | 5th Period. Hitoshi Nakazato | Hereditary Nephropathy |
| 2 | 10/12 | 5th Period. Masanori Iwai | Recent advanced neonatal intensive care in Japan and new therapeutic strategies for neonatal hypoxic ischemic encephalopathy (HIE). The first topic is the introduction of the neonatal intensive care unit for vulnerable babies. The second topic is new therapeutic strategies for neonatal HIE by erythropoietin through neurogenesis, vasculogenesis, oligodendrogenesis and remyelination. |
| 3 | 10/19 | 5th Period. Hiroshi Mitsubuchi | Congenital abnormalities and genetic counseling |
| 4 | 10/26 | 5th Period. Kimitoshi Nakamura | Inborn errors of metabolism |
| 5 | 11/02 | 5th Period. Kotaro Anan | Molecular basis and therapeutic strategies for pediatric disorders in children |
| 6 | 11/09 | 5th Period. Takashi Hamazaki | Enzyme replacement therapy and gene therapy for inherited diseases during childhood |
| 7 | 11/16 | 5th Period. Shiro Ozasa | The Molecular Pathogenesis and Therapeutic Strategies of Pediatric Neuromuscular disorders ― Duchenne Muscular Dystrophy and Spinal Muscular Atrophy ― |
| 8 | 11/30 | 5th Period. Shiro Matsumoto | Amino acid metabolism and Disorders |
| 9 | 12/07 | 5th Period. Takaaki Sawada | New diagnostics and treatments for rare pediatric diseases |
| 10 | | Takashi Ohba　【eJ-0】 | Prenatal diagnosis, current status and the ethics |
| 11 | 12/21 | 5th Period. Eiji Kondoh | Management of preeclampsia |
| 12 | | Fumitaka Saito　【eJ-0】 | Endometrial physiology, pathology and carcinogenesis |
| 13 | | Munekage Yamaguchi　【eJ-0】 | Villous macrophages in the human placenta: a variety of functions and perinatal complications |
| 14 | 01/25 | 5th Period. Kaori Isono | Relationship between macrophages and microbiota in maintaining intestinal homeostasis |
| 15 | 02/01 | 5th Period. Taizo Hibi | Indications and outcomes of abdominal organ transplantation for children |
| Estimated out-of-class | | | |

| | |
|---|---|
| study time | |
| Required Textbook(テキスト) | |
| Reading List(参考文献) | |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | The participants should submit a report including what they learned through the contents of lecture, and will be evaluated by score. |
| Language Used in Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-013-83-2 | 2023whole year | Graduate School of Medical Sciences (20140) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Advances in Oncologic Medicine(C5) | SUZUKI Makoto, ARAKI Norie, BABA Hideo, NAKAYAMA Hideki |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥45% 2.Profound inter-disciplinary knowledge ‥‥35% 3.Global perspective and ability to take initiative action ‥‥10% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint will be used in the lectures, and active participation in the discussion is encouraged. Extra classes or video lectures are considered for those who are regularly absent for unavoidable reasons. |
| Course Goals(授業の目的) | To understand advances in oncologic medicine, this course serves evidences and recent findings of medical oncology as follows: |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>To understand advances in oncologic medicine, this course serves evidences and recent findings of medical oncology as follows: (1) Overview of tumor biology and genetics; (2) Recent advances in gastroenterological surgery; (3) Recent advances in oral and maxillofacial surgery; (4) Recent advances in thoracic surgery<br>【C level (C水準)】 |
| Course Outline(授業の概要) | This course overviews landmark findings in mechanism of tumor genesis and recent developments, and serves some of leading-edge research and our data. We focus on following topics: molecular mechanisms of tumor-related genes, cell cycle, cell death, cell differentiation; therapeutic agents based on tumor biology; molecular diagnostic tools, genome, transcriptome and proteomics; cancer stem cell.<br>Many people suffer from gastroenterological cancers (esophageal, gastric, colon, pancreas, liver, billiary tract and gastrointestinal stromal tumor). We explain not only standard treatment for gastroenterological cancer but also cutting-edge treatment for refractory or metastatic, or recurrent gastroenterological cancer. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | 10/03 | (Tue) 4th period Araki Norie 【eEJ-L】 | Tumor Genetics and biology (introduction) |
| 2 | 10/10 | (Tue) 4th period Araki Norie 【eEJ-L】 | Tumor Genetics and biology 1 |
| 3 | 10/17 | (Tue) 4th period Araki Norie 【eEJ-L】 | Tumor Genetics and biology 2 |
| 4 | | Baba Hideo 【eJ-0】 | Gastroenterological surgery (introduction) |
| 5 | | Baba Hideo 【eE-0】 | Gastroenterological surgery 1 |
| 6 | | Baba Hideo 【eJ-0】 | Gastroenterological surgery 2 |
| 7 | | Baba Hideo 【eE-0】 | Gastroenterological surgery 3 |
| 8 | | Baba Hideo 【eE-0】 | Gastroenterological surgery 4 |
| 9 | | Baba Hideo 【eE-0】 | Gastroenterological surgery 5 |
| 10 | | Nakayama Hideki 【eJ-0】 | Oral and maxillofacial tumors |
| 11 | | Nakayama Hideki 【eJ-0】 | Diagnosis and treatment of oral cancer |
| 12 | | Nakayama Hideki【eJ-0】 | Challenges in oral cancer treatment |
| 13 | | Suzuki Makoto 【eE-0】 | Thoracic surgery (introduction) |
| 14 | | Suzuki Makoto 【eJ-0】 | Lung cancer ---------- |
| 15 | | Suzuki Makoto 【eE-0】 | Medistinal tumor --------- |

| | |
|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Textbooks are not specified. |
| Reading List(参考文献) | “Natural obsessions:The search for the oncogene” by Angier. N, Houghton Mifflin Co, 1988.<br>“Cancer: principles & practice of oncology, 7th ed” by DeVita VT, Lippincott Williams & Wilkins.2004<br>“The biology of cancer” by Weinberg RA Garland Science, 2007.<br>“Clinical Oncology.” by Abeloff MD, Churchill Livingstone, .<br>“ACS surgery: principles and practice” by Wilmore DW, WebMD.<br>・ “Thoracic Surgery, 2nd edition ” by Pearson FG, Churchill Livingstone, 2002 |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Grading will be based on active class participation, paper summaries,and final report. |
| Language Used in Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-014-83-2 | 2023whole year | Graduate School of Medical Sciences (20150) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| The Forefront of Clinical Oncology(C6) | OYA Natsuo, MUKASA Akitake, Yasunaga Jiyunichirou, MURAKAMI Ryuji, NOSAKA Kisato, YAMAMOTO Yutaka, Saitou Fumitaka, MOTOHARA Takeshi, IWANAGA Eisaku |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥70% 2.Profound inter-disciplinary knowledge ‥‥10% 3.Global perspective and ability to take initiative action ‥‥10% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | Video lectures or e-learning programs may be considered for those who are regularly absent for unavoidable reasons. |
| Course Goals(授業の目的) | In Lecture Series “Riron”: C6 The Forefront of Clinical Oncology II, you learn basic concepts and novel techniques in the most advanced clinical oncology, including (1) radiation oncology, (2) breast and endocrine oncology, (3) gynecological oncology, (4) neurooncology, (5) hematological oncology. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>You learn basic concepts and novel techniques in the most advanced clinical oncology, including (1) radiation oncology, (2) breast and endocrine oncology, (3) gynecological oncology, (4) neurooncology, (5) hematological oncology.<br>【C level (C水準)】 |
| Course Outline(授業の概要) | (1) The forefront of radiation oncology, especially the development in 3-D conformal external beam radiotherapy techniques is lectured. (2) The forefront of breast and endocrine oncology is lectured, especially regarding surgery, chemotherapy, and molecular target therapy for breast cancer and thyroid cancer. (3) The forefront of gynecological oncology, especially the recent development and therapeutic modalities, is explained, including brathytherapy, external beam radiotherapy and chemoradiotherapy for uterine cervical cancer. (4) The forefront of neurooncology is explained especially regarding the molecular biology in malignant brain tumors. (5) The forefront of hematological oncology is lectured especially regarding the mechanisms in tumor development and suppression. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Natsuo Oya 【eJ-0】 | “Radiation biology and physics” |
| 2 | | Natsuo Oya 【eJ-0】 | “Stereotactic radiotherapy and intensity-modulated raidotherapy” |
| 3 | | Ryuji Murakami 【eJ-0】 | “Image-guided radiotherapy and adaptive radiotherapy” |
| 4 | | Yutaka Yamamoto 【eJ-0】 | “Biological features of breast cancer” |
| 5 | | Yutaka Yamamoto 【eJ-0】 | “Paradigm shift in breast cancer treatment” |
| 6 | | Yutaka Yamamoto 【eJ-0】 | “Molecular target therapy for breast cancer” |
| 7 | | Takeshi Motohara【eJ-0】 | “Epidemiology of gynecological malignancies” |
| 8 | | Fumitaka Saito 【eJ-0】 | “Paradigm shift of the treatment for gynecological malignancies” |
| 9 | | Takeshi Motohara 【eJ-0】 | “Radiation therapy for gynecological malignancies” |
| 10 | | Akitake Mukasa 【eJ-0】 | “Character of brain tumor” |
| 11 | | Akitake Mukasa 【eJ-0】 | “Brain tumor diagnosis” |
| 12 | | Akitake Mukasa 【eJ-0】 | “Brain tumor therapy” |
| 13 | | Eisaku Iwanaga 【eJ-0】 | “Hematological oncology I - leukocytes” |
| 14 | | Kisato Nosaka 【eJ-0】 | “Hematological oncology II - lymphocytes” |
| 15 | | Jun-chirou Yasunaga【eJ-0】 | “Hematological oncology III - Hematological malignancies induced by viruses” |

| | |
|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | |
| Reading List(参考文献) | |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Grading will be based on active class participation, paper summaries,<br>or the final report. Grading will be based on the student's understanding of the course subject matter. The students' understanding will be evaluated on the basis of papers and quizzes related to the topics dealt with in class to be scored from 0 to 100.Final grades will be based on the average score of the papers and quizzes as well as participation in class discussions |
| Language Used in Instruction(使用言語) | Japanese |
| Textbook/Material | Japanese |

| | |
|---|---|
| Language(教科書・資料の言語) | Japanese |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-015-83-2 | 2023whole year | Graduate School of Medical Sciences (20160) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Restorative Medicine(C7　Restorative Medicine ) | FUKUI Toshihiro, MIYAMOTO Takeshi, FUKUSHIMA Satoshi, NISHIKAWA Takeshi, Yasunaga Jiyunichirou, KAWANO Hiroaki, NAKATA Hirotomo |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥50% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥10% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint and/or OHP will be used in the lectures, and active participation in the discussion is encouraged. Extra classes or video lectures are considered for those who are regularly absent for unavoidable reasons. |
| Course Goals(授業の目的) | The objectives of this course are for you to understand the following: (1) pathology and therapeutic strategies of sepsis, the mechanisms of organ failure developed from sepsis, (2) risk factors for coronary syndrome, the latest knowledge regarding cardiovascular diseases and their surgical treatment; (3) the latest knowledge regarding cardiovascular diseases and their surgical treatment; (4) the mechanisms of skin wound healing, differences in body surface blood flow distribution between anatomical locations, and plastic surgery procedures and regenerative medical techniques; (5) disorders of bone and joint function and the reconstruction thereof; (6) basic knowledge required to plan out and implement clinical studies. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Who could understand and explain, (1) pathogenesis underlying and strategy to treat sepsis and organ failures due to sepsis; (2) risk factors for coronary syndrome; (3) latest knowledges regarding cardiovascular diseases and their surgical treatments; (4) mechanisms underlying dermal wound healing, distribution of body surface blood flow, techniques for plastic surgery and regenerative medicine; (5) mechanisms underlying and ways of treatment for bone and joint diseases; (6) basic knowledges for planning and conducting clinical studies.It is recommended for you to review the handout materials distributed in the lectures and your notebooks well. If you want to ask any questions to the lecturers, "Office Hour" is available for you. It is also recommended to review the lectures by using e-learning contents if available.<br>【C level (C水準)】<br>Who could understand, (1) pathogenesis underlying and strategy to treat sepsis and organ failures due to sepsis; (2) risk factors for coronary syndrome; (3) latest knowledges regarding cardiovascular diseases and their surgical treatments; (4) mechanisms underlying dermal wound healing, distribution of body surface blood flow, techniques for plastic surgery and regenerative medicine; (5) mechanisms underlying and ways of treatment for bone and joint diseases; (6) basic knowledges for planning and conducting clinical studies. |
| Course Outline(授業の概要) | In this class, the current situation and problems of restorative medicine are explained in terms of both life support and vital function.<br>With continued progress in the field of medicine, critical care medicine has produced a steady flow of successful results and its functional prognosis has also improved dramatically. We will introduce new definition and therapeutic strategies of international sepsis guidelines with outline of new clinical research. We will also provide the mechanisms of organ failure from sepsis in basic and clinical viewpoint.<br>Moreover, we will provide lectures regarding risk factors for acute coronary syndrome, which needs urgent therapy, and the progress of surgical treatments for heart failure, ischemic heart diseases, and valvular heart diseases.<br>Although disorders of the skin, bones, and joints are rarely directly life-threatening conditions, they greatly affect a patient's vital functions. We will explain the theory of skin wound healing and the latest molecular biological knowledge, and we will also provide lectures regarding the progress made in the area of skin flaps through studies of blood flow in human skin and discuss reconstructive medicine for the blood vessels, lymph vessels, and nerves in terms of the development of microsurgery. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Satoshi Fukushima【eJ-0】 | Mechanism of Wound healing |
| 2 | | Satoshi Fukushima【eJ-0】 | Reconstruction by local frap |
| 3 | | Satoshi Fukushima【eJ-0】 | Reconstruction with microsurgery |
| 4 | | Takeshi Miyamoto　【eJ-0】 | Pathophysiology of bone metabolism |
| 5 | | Takeshi Miyamoto　【eJ-0】 | Physiology and biology of articular cartilage |
| 6 | | Takeshi Miyamoto　【eJ-0】 | Inflammatory arthritis |
| 7 | | Takeshi Nishikawa　【eJ-0】 | Hypothesis and Design of Clinical Researches |
| 8 | | Junichiro Yasunaga　【eJ-0】 | Hematopoiesis in the bone marrow and hematopoietic stem cell transplantation therapy |
| 9 | | Hirotomo Nakata　【eJ-0】 | |
| 10 | | Hiroaki Kawano　【eJ-0】 | Risk factors for acute coronary syndrome and gender difference |
| 11 | | Toshihiro Fukui　【eJ-0】 | Sugical treatment of heart failure |
| 12 | | Toshihiro Fukui　【eJ-0】 | Surgical treatment of ischemic heart disease |
| 13 | | Toshihiro Fukui　【eJ-0】 | Surgery of valvular heart disease |
| 14 | | Takeshi Nishikawa　【eJ-0】 | Hypothesis and design from the perspective of diabetic complications researches |
| 15 | | Hiroaki Kawano 【eJ-0】 | X Y chromosome related disease |
| Estimated out-of-class | | | |

| | |
|---|---|
| study time | |
| Required Textbook(テキスト) | Textbooks are not specified, and handouts will be distributed. |
| Reading List(参考文献) | |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Grading will be based on active class participation, paper summaries, and the final report. Grading will be based on the student's understanding of the course subject matter. The students' understanding will be evaluated on the basis of papers dealt with in class to be scored from 0 to 100. Final grades will be based on the average score of the papers as well as participation in class discussions. |
| Language Used in Instruction(使用言語) | Japanese |
| Textbook/Material Language(教科書・資料の言語) | Japanese |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-016-83-2 | 2023whole year | Graduate School of Medical Sciences (20170) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Cancer therapeutics(C8 Cancer therapeutics) | SUZUKI Makoto, MUKASA Akitake, SAKAGAMI Takuro, OYA Natsuo, Kanba Tomomi, ORITA Yorihisa, BABA Hideo, NAKAYAMA Hideki, NOSAKA Kisato, YAMAMOTO Yutaka, FUKUSHIMA Satoshi, MOTOHARA Takeshi, Hibi Taizou, MIYAMOTO Takeshi, TANAKA Yasuhito |

Goals with their ratio(学修成果とその割合)

1.Advanced expert knowledge, skill and research capability ‥‥60% 2.Profound inter-disciplinary knowledge ‥‥35% 3.Global perspective and ability to take initiative action ‥‥5%

| | |
|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | We deal with a student by intensive lecture of power point or e-learning. |
| Course Goals(授業の目的) | In the current lecture, we lead to comprehend the fundamental knowledge of therapy for cancer such as surgery, radiotherapy, chemotherapy and immunotherapy and the historical change, standard treatment and future directions of cancer therapy. Furthermore, the aims of the current lecture are to understand thoroughly the leading-edge medical treatment for various types of cancer as follows: (1) gastroenterological tumor (2) respiratory tract tumor (3) brain and nervous system neoplasm (4) head and neck tumor (5) otolarygological neoplasia (6) breast endocrine tumor (7) genitourinary system tumor (8) gynecological tumor (9) orthopaedic and neuro-musculoskeletal tumor (10) skin tumor (11) hematopoietic tumor (12) pediatric tumors. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>To comprehend the fundamental knowledge of therapy for cancer such as surgery, radiotherapy, chemotherapy and immunotherapy and the historical change, standard treatment and future directions of cancer therapy.<br>To understand thoroughly the leading-edge medical treatment for various types of cancer as follows: (1) gastroenterological tumor (2) respiratory tract tumor (3) brain and nervous system neoplasm (4) head and neck tumor (5) otolarygological neoplasia (6) breast endocrine tumor (7) genitourinary system tumor (8) gynecological tumor (9) orthopaedic and neuro-musculoskeletal tumor (10) skin tumor (11) hematopoietic tumor (12) pediatric tumors.<br>【C level (C水準)】 |
| Course Outline(授業の概要) | The aims of current lecture are to understand the up-to date treatment for the various types of cancer in addition to standard cancer therapy such as surgery, radiotherapy, chemotherapy and immunotherapy. In late years a guideline is devised every each organ, and maintain the balance of therapy is planned about the cancer.A number of clinical trials are promoted to attempt the standardization of the cancer therapy. You can learn how the standard treatments are confirmed from the results of various clinical trials. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Yasuhito Tanaka 【eJ-0】 | Medical treatment of the gastrointestinal cancer |
| 2 | | Hideo Baba 【eJ-0】 | Surgical cure of the digestive cancer |
| 3 | | Takuro Sakagami 【eJ-0】 | Medical treatment of the lung cancer |
| 4 | | Makoto Suzuki 【eJ-0】 | Surgical treatment of the lung cancer |
| 5 | | Hideki Nakayama 【eJ-0】 | The treatment of the Oral cancer<br>The lecture will be performed on the effectiveness and clinical application of surgery, radiotherapy, chemotherapy, and immunotherapy in oral cancer patients. |
| 6 | | Yorihisa Orita 【eJ-0】 | The treatment of the head and neck cancer |
| 7 | | Takeshi Miyamoto 【eJ-0】 | The treatment of the bone soft part tumor |
| 8 | | Yutaka Yamamoto 【eJ-0】 | Treatment of breast cancer |
| 9 | | Takeshi Motohara 【eJ-0】 | The treatment of the gynecologic malignant tumor |
| 10 | | Tomomi Kamba 【eJ-0】 | The treatment of genitourinary cancers |
| 11 | | Satoshi Fukushima 【eJ-0】 | Skin cancer therapy___ |
| 12 | | Taizo Hibi 【eJ-0】 | Pediatric Solid Cancer Therapy |
| 13 | | Akitake Mukasa 【eJ-0】 | The treatment of the brain tumor |
| 14 | | Kisato Nosaka 【eJ-0】 | The treatment of the hematologic malignancies |
| 15 | | Natsuo Ohya 【eJ-0】 | Radiotherapy of the cancer |

| | |
|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | We distribute in particular the print which we summarized the point of the lecture in without appointing it. |
| Reading List(参考文献) | ・ A new clinical oncology<br>・ Cancer principles & practice of oncology,V.T. DeVita, S.Hellman, S.A.Rosenberg,Lippincott Willams &Wilkins<br>・ Clinical Oncology, M.D.Abeloff, J.O. Armitage, J.E.Niederhuber,M.B.Kastan,W.G.McKenna, Elsevier<br>・ Cancer Medicine, Holland-Frei, AACR ・ The biology of Cancer, R.A.Weinberg, Garland Science<br>・ NCCN guideline |
| Enrollment Conditions(履修 | |

| | |
|---|---|
| 条件) | |
| Assessment Methods and Criteria(評価方法・基準) | We evaluate the attendance situation to a lecture, lecturing questions and answers and the lecture understanding degree about the matter which we raised to the [the aim of the class] by reports about a theme shown at being finished.Grading will be based on the student's understanding of the course subject matter. The students' understanding will be evaluated on the basis of papers and quizzes related to the topics dealt with in class to be scored from 0 to 100.Final grades will be based on the average score of the papers and quizzes as well as participation in class discussions. |
| Language Used in Instruction(使用言語) | Japanese |
| Textbook/Material Language(教科書・資料の言語) | Japanese |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-017-83-2 | 2023whole year | Graduate School of Medical Sciences (20180) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Paliative Care(C9) | SUGITA Michiko, HIRATA Naoyuki |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥30% 2.Profound inter-disciplinary knowledge ‥‥40% 3.Global perspective and ability to take initiative action ‥‥15% 4.Social leadership drive ‥‥15% |

| | |
|---|---|
| Type of Class(授業の形態) | Other |
| Teaching Method(授業の方法) | Using  e-learning system in Web site of Japan Society of Clinical Oncology |
| Course Goals(授業の目的) | Most clinical professionals have been affected by caring for patients with palliative care needs.  Such patients may challenge us at both a professional and at a personal level in areas where we feel our confidence or competence are challenged. This course serves as introductory for Palliative care medicine. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>-<br>【C level (C水準)】 |
| Course Outline(授業の概要) | In order to understand the principle of palliative care medicine, we discussed the followings: (1) oncology, (2) symptom management, (3) emotional issues in palliative medicine, (4) culture and spiritual aspects of palliative medicine, (5) contribution of palliative medicine of allied health professions. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | | |

| | |
|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | not specified |
| Reading List(参考文献) | Oxford Textbook of Paliative medicine. 3rd. Edited by Doyle D, Hanks G, et al., Oxford University Press<br>Oxford Handbook of Palliative care.  Edited by Watson M, Lucas C, Hoy A, Back I, Oxford University Press |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | |
| Language Used in Instruction(使用言語) | Japanese (Japanese) |
| Textbook/Material Language(教科書・資料の言語) | Japanese (Japanese) |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-018-83-2 | 2023whole year | Graduate School of Medical Sciences (20190) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| The Theory of Clinical Research(C10Learning of The Theory of Clinical Research) | YAMAMOTO Yutaka, HAMADA Akinobu, SUZUKI Makoto, MUKASA Akitake, Kanba Tomomi, BABA Hideo, MATSUI Kunihiko |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥45% 2.Profound inter-disciplinary knowledge ‥‥35% 4.Social leadership drive ‥‥20% |

| | |
|---|---|
| Type of Class(授業の形態) | Other |
| Teaching Method(授業の方法) | PowerPoint presentation will be usually provided in the lectures. Video lectures or e-learning programs will be provided for those who are regularly absent for unavoidable reasons. |
| Course Goals(授業の目的) | To comprehend necessary knowledge in order to conduct intervention studies/clinical trials |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>1) To conduct scientifically rational and ethical research<br>2) To play a role as a project member in a large-scale or multicenter clinical study<br>3) To interpret research findings enough to apply into clinical practice<br>4) To broaden knowledge about clinical researches and standard treatments for malignancies<br>【C level (C水準)】<br>1) To comprehend scientific rationale clinical research<br>2) To comprehend methods to conduct clinical research<br>3) To comprehend development and strategies of anti-cancer drugs |
| Course Outline(授業の概要) | You will learn about bases of research ethics, epidemiology, biostatistics, study design, and drug kinetics/dynamics needed for clinical trials. And also, you will learn about the biochemical characters and the treatments based on evidence of the clinical trial (EBM; evidence based medicine) in various kinds of cancers, including lung cancer, gastric cancer, colorectal cancer, liver cancer, breast cancer, urinary organ cancer and malignant brain tumor. In addition, the latest topics of the translational study and prospects of the molecular biology will be discussed. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Yamamoto Yutaka, eEJ-O | Basic of clinical research 1 |
| 2 | | Matsui Kunihiko, eEJ-O | Details of ethical guideline for clinical research |
| 3 | | Yamamoto Yutaka, eJ-O, eE-O | Basic of clinical research 2 |
| 4 | | Akinobu Hamada, eEJ-O | Pharmacokinetics/Pharmacodynamics of anti- tumor agents |
| 5 | | Kenji Tamura, eEJ-O | Pharmacokinetics/Pharmacodynamics of anti- tumor agents |
| 6 | | Yutaka Yamamoto, eEJ-O | Design and Assessment of clinical trailas |
| 7 | | Makoto Suzuki, eE-O | Clinical trials on lung cancer (1) |
| 8 | | Makoto Suzuki, eE-O | Clinical trials on lung cancer (2) |
| 9 | | Hideo Baba, eE-O | Clinical trials on gastric cancer |
| 10 | | Hideo Baba, eE-O | Clinical trials on colorectal cancer |
| 11 | | Hideo Baba, eE-O | Clinical trials on hepatic cell carcinoma |
| 12 | | Yutaka Yamamoto, eEJ-O | Clinical trials on breast cancer (1) |
| 13 | | Yutaka Yamamoto, eEJ-O | Clinical Trials on breast cancer (2) |
| 14 | | Tomomi Kamba, eEJ-O | Clinical Trials on urinary organ cancer |
| 15 | | Akitake Mukasa, eEJ-O | Clinical Trials on malignant brain tumor |

| | |
|---|---|
| Estimated out-of-class study time | 60 hours of self-learning (out-of-class study) is recommended in addition to 30-hours lecture (2 hours x 15 times). |
| Required Textbook(テキスト) | |
| Reading List(参考文献) | Eanuel EJ. et al. The Oxford Textbook of Clinical Research Ethics. Oxford University Press., 2008<br>Breast Cancer, Molecular Genetics, Pathogenesis, and Therapeurics" edited by Bowcock, HUMANA PRESS, 2004<br>Cheson BD,et al. Revised recommendations of the International Working Group for Diagnosis, Standardization of Response Criteria, Treatment Outcomes, and Reporting Standards for Therapeutic Trials in Acute Myeloid Leukemia. J Clin Oncol. 2003 Dec 15;21(24):4642-9.<br>American Society of Clinical Oncology Clinical Practice Guideline, National Comprehensive Cancer Network Clinical (NCCN) Guidelines for the Treatment of Cancer by Site, which are available on the internet. |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | We evaluate the attendance at a lecture, lecturing questions and answers and the lecture understanding degree about the matter which we raised to the [the aim of the class] by reports about a theme shown at being finished. Grading will be based on the student's understanding of the course subject matter. The students' understanding will be evaluated on the basis of papers and quizzes related to the topics dealt with in class to be scored from 0 to 100. Final grades will be based on the average score of the papers and quizzes as well as participation in class discussions. |
| Language Used in | Japanese and English |

| | |
|---|---|
| Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Applicable (Each instructor has experiences as a primary investigator and a collaborator of clinical reserch projects, or a member of review boards.) |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-156-99-1 | 2023whole year | Graduate School of Medical Sciences (25240) | 1 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Training of biostatistics in clinical study(C11) | TOMIZAWA Kazuhito, Morinaga Jun |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥50% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥10% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Lecture and Seminar |
| Teaching Method(授業の方法) | Lecture (Q & A style), Practical use of PC & statistical software (EZR). |
| Course Goals(授業の目的) | Knowledge about basic statistical methods is important for researchers to plan and execute biological/clinical study. Therefore, the aim of this course is to learn about how researchers use statistical tests through carrying out biological experiments and/or clinical studies. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Understanding study design. Performing basic statistical tests (comparing two groups, three or more groups, multivariate analysis etc).<br><br>【C level (C水準)】<br>Understanding basic statistical theory. |
| Course Outline(授業の概要) | In this class, students will learn about study design, basic statistical theories, and practice basic tests using statistical software "EZR". |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | MORINAGA Jun,【eJ-0】 | Description of data |
| 2 | | MORINAGA Jun,【eJ-0】 | Comparing two groups |
| 3 | | MORINAGA Jun,【eJ-0】 | Comparing three or more groups |
| 4 | | MORINAGA Jun,【eJ-0】 | Correlation and simple linear regression |
| 5 | | MORINAGA Jun,【eJ-0】 | Contingency table analysis |
| 6 | | MORINAGA Jun,【eJ-0】 | Statistical inference, bias, confounders, errors |
| 7 | | MORINAGA Jun,【eJ-0】 | Statistical design 1 |
| 8 | | MORINAGA Jun,【eJ-0】 | Statistical design 2 |
| 9 | | MORINAGA Jun,【eJ-0】 | Statistical design 3 |
| 10 | | MORINAGA Jun,【eJ-0】 | Dataset |
| 11 | | MORINAGA Jun,【eJ-0】 | Multivariate analysis 1 |
| 12 | | MORINAGA Jun,【eJ-0】 | Multivariate analysis 2 |
| 13 | | MORINAGA Jun,【eJ-0】 | Multivariate analysis 3 |
| 14 | | MORINAGA Jun,【eJ-0】 | Survival data analysis 1 |
| 15 | | MORINAGA Jun,【eJ-0】 | Survival data analysis 2 |

| | |
|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Handout / sample data for statistical analysis |
| Reading List(参考文献) | Indicated in each lecture. |
| Enrollment Conditions(履修条件) | Bring own personal computer for statistical practice (Windows). |
| Assessment Methods and Criteria(評価方法・基準) | Attendance at lectures, Q&A, and score of reports. |
| Language Used in Instruction(使用言語) | Japanese |
| Textbook/Material Language(教科書・資料の言語) | Japanese |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-157-99-1 | 2023whole year | Graduate School of Medical Sciences (25250) | 1 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Overview of clilnical study(Overview of clilnical study（C12）) | TANAKA Yasuhito, YAMASAKI Akira, MORINAGA Jun, MIYASHITA Azusa, MATSUI Kunihiko, TSUJITA Kenichi, NAKAMURA Taishi, TODAKA Koji, UCHIYAMA Makiko, SANUKI Tetsuji, KAWAGUCHI Takayoshi, YAMAZAKI Hajime |

Goals with their ratio(学修成果とその割合)

1.Advanced expert knowledge, skill and research capability ‥‥80% 2.Profound inter-disciplinary knowledge ‥‥10% 3.Global perspective and ability to take initiative action ‥‥5% 4.Social leadership drive ‥‥5%

| | |
|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | Face-to-face or e-learning lectures using handouts. |
| Course Goals(授業の目的) | The purpose of this lecture is to provide young researchers who are about to start clinical research with the basic knowledge necessary to plan and conduct their research. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Acquire sufficient knowledge to plan and conduct clinical research, in addition to concepts related to the framework of observational and interventional research, research ethics, statistics, regulations, practices, big data construction and utilization, intellectual property, etc.<br>【C level (C水準)】<br>Acquire essential knowledge to plan and conduct clinical research, in addition to concepts related to the framework of observational and interventional research, research ethics, statistics, regulations, practices, big data construction and utilization, intellectual property, etc. |
| Course Outline(授業の概要) | The course provides an overview of observational and intervention research, research ethics, statistical concepts, study design, regulations and practices, and big data construction and utilization, as well as the essence of knowledge about intellectual property. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | 10/05 | Thu. 4th period. TANAKA Yasuhito, 【eJ-L】 | Introduction to clinical research: Translational research |
| 2 | 10/12 | Thu. 4th period. YAMASAKI Akira, 【eJ-L】 | Research Ethics: Protecting participants in clinical research |
| 3 | | MORINAGA Jun, 【eJ-0】 | Statistical principles in clinical research |
| 4 | | MORINAGA Jun, 【eJ-0】 | Introduction of study design in clinical research |
| 5 | 11/02 | Thu. 4th period. MIYASHITA Azusa,【eJ-L】 | Understanding guidelines and laws in clinical research |
| 6 | | MIYASHITA Azusa, MORINAGA Jun,【eJ-0】 | Introduction of protocol writing in clinical research |
| 7 | 11/16 | Thu. 4th period. MATSUI Kunihiko, 【eJ-L】 | Promotion and practice of observational study |
| 8 | 11/30 | Thu. 4th period. TSUJITA Kenichi, 【eJ-L】 | Promotion and practice of interventional study |
| 9 | 12/07 | Thu. 4th period. NAKAMURA Taishi, 【eJ-L】 | Construction and application of medical big data |
| 10 | | TODAKA Koji, 【eJ-0】 | Regulatory science |
| 11 | | UCHIYAMA Makiko, 【eJ-0】 | Management of clinical study |
| 12 | | SANUKI Tetsuji, 【eJ-0】 | Management of medical device development |
| 13 | 01/18 | Thu. 4th period. KAWAGUCHI Takayoshi, 【eJ-L】 | Importance of intellectual property in clinical development |
| 14 | 01/25 | Thu. 4th period. YAMAZAKI Hajime, 【eJ-L】 | Practice of study design in clinical research 1 |
| 15 | 02/01 | Thu. 4th period. YAMAZAKI Hajime, 【eJ-L】 | Practice of study design in clinical research 2 |

| | |
|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Textbooks are not specified. |
| Reading List(参考文献) | Provided in the lectures. |
| Enrollment Conditions(履修条件) | No prerequisite. |
| Assessment Methods and Criteria(評価方法・基準) | The level of understanding of the lectures will be evaluated by examining the reports and scores in quizzes related to the lectures. |
| Language Used in Instruction(使用言語) | Japanese |
| Textbook/Material Language(教科書・資料の言語) | Japanese |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

D1 Medicine & Life Science Seminar (Elective 2 credits) Subject code:20220

# Academic Year 2023, D1 Medicine & Life Science Seminar

Place: Lecture room 2, Medical Education & Library Building 3F. Time & Date: From 17:30 (Usually on Wednesday)

| № | Schedule | Talker | Title | Affiliation | Inviter |
|---|---|---|---|---|---|
| 1 | Apr 19 (WED) | KANKI Tomotake | Mitophagy～mitochondrial morphology and quality control～ | Professor, Department of Cellular Physiology, Niigata University Graduate School of Medical and Dental Sciences | Molecular Genetics |
| 2 | May 31 (WED) | YOSHIMATSU Yasuhiro | Lymphatic vessels in health and disease | Associate Professor, Division of Pharmacology, Graduate School of Medical and Dental Sciences, Niigata University | Cell Pathology |
| 3 | Jun 7 (WED) | NAKAE Susumu | Role of epithelial cell-derived cytokines in allergy | Professor, Graduate School of Integrated Sciences for Life, Hiroshima University | Microbiology |
| 4 | Jun 14 (WED) | Ohyama Kaname | Development of pathological research by comprehensive analysis of immune complexes | Professor, Department of Hospital Pharmacy, Nagasaki University | Neuropsychiatry |
| 5 | Jun 21 (WED) | GOYAMA Susumu | CRISPR-Cas: biology and its application to blood research | Professor, Division of Molecular Oncology, Graduate School of Frontier Sciences, The University of Tokyo | Transcriptional Regulation in Leukemogenesis |
| 6 | Jul 12 (WED) | HIBINO Hiroshi | Interdisciplinary Approaches to Inner Ear Research | Professor, Division of Global Pharmacy Department of Pharmacology Graduate School of Medicine, Osaka University | Sensory and Cognitive Physiology |
| 7 | Jul 19 (WED) | OKAMOTO Toru | Virus infection and pathogenesis | Professor, Department of Microbiology, Faculty of Medicine, Juntendo University | Infection and Immunity |
| 8 | Aug 9 (WED) | ISHIZU Ayako | Hematopoietic stem cell regulation by extrinsic and metabolic factors | Professor, Dept. Microanatomy and Developmental Biology, Tokyo Women's Medical University | Stem Cell Stress |
| 9 | Nov 1 (WED) | FURUSE Mikio | Roles of cell-cell junctions in epithelial barrier function | Professor, Division of Cell Structure, National Institute for Physiological Sciences | Histology |
| 10 | Dec 13 (WED) | SUZUKI Motoshi | Therapeutic strategies to target cancer-specific pathways and vulnerability | Professor, Fujita Health Univ, Dep Mol Oncol | Hematopoiesis |
| 11 | Jun 31 (WED) | IWAI Kazuhiro | Ubiquitin in signaling: a tale of atypical linear ubiquitin chains | Professor, Department of Molecular and Cellular Physiology, Graduate School of Medicine, Kyoto University | Molecular and Medical Pharmacology |

Note: The date, time or place of these lectures may change due to the inviter's and lecturer's schedules. Please check the details with the seminar guide leaflet distributed to each Department beforehand. Also please check our website for the latest information. We might add the seminar other than the above. (http://www.medphas.kumamoto-u.ac.jp/en/medgrad/gakunai/seminar/)

***** Each seminar will be held in English *****

D2 Learning from Experienced Doctors Seminar (Elective 2 credits) Subject code 20230

# Academic Year 2023, D2 Learning from Experienced Doctors Seminar

Place: Lecture room 2, Medical Education & Library Building 3F. Time & Date: From 17:30 (Usually on Wednesday)

| № | Schedule | Talker | Title | Affiliation | Inviter |
|---|---|---|---|---|---|
| 1 | Apr 12 (WED) | MOCHIZUKI Naoki | Understanding Cardiovascular Development by in vivo Imaging using Zebrafish | Director General, Department Head of Cell Biology, National Cerebral and Cardiovascular Center Research Institute (NCVC RI) | Molecular Genetics |
| 2 | Apr 26 (WED) | MATSUDA Koichi | Disease biobank and genome research | Professor, Laboratory of Clinical Genome Sequencing Department of Computational biology and Medical Sciences, Graduate school of Frontier Science, The University of Tokyo | Hematopoiesis |
| 3 | May 10 (WED) | KOIKE Shinsuke | What we know about psychiatric disorders from human brain MRI studies. | Associate Professor Center for Evolutionary Cognitive Sciences (ECS) at the University of Tokyo | Molecular Brain Science |
| 4 | May 17 (WED) | YOSHIMI Akihide | Targeting Aberrant RNA Splicing in Cancer | Chief, Division of Cancer RNA Research, National Cancer Center Research Institute | Transcriptional Regulation in Leukemogenesis |
| 5 | Jul 5 (WED) | Kawato Mitsuo | Diagnostic and therapeutic systems based on brain science and AI | Director, ATR Brain Information Communication Research Laboratory Group | Neuropsychiatry |
| 6 | Sep 6 (WED) | ITO Toshihiro | Immune mechanism of COVID-19 and its elucidation | Professor, Department of Immunology, Nara Medical University | Infection and Immunity |
| 7 | Sep 8 (FRI) | MATSUMOTO Toshihiko | Why do people become addicted? | Director, Department of Drug Dependence Research, National Institute of Mental Health, National Center of Neurology and Psychiatry | Histology |
| 8 | Oct 4 (WED) | NAKAYAMA Keiichi | Next Generation Proteomics x AI Revolutionizing Cancer Therapy | Distinguished Professor, Division of Cell Biology, Department of Molecular and Cellular Biology, Medical Institute of Bioregulation, Kyushu University | Molecular and Medical Pharmacology |
| 9 | Oct 18 (WED) | SASAKI Hiroyuki | Efforts related to formulating a business continuity plan (BCP) of Tohoku University Hospital | Associate Professor, Division of International Cooperation for Disaster Medicine, International Research Institute of Disaster Science (IRIDeS) | Disaster and Critical Care Medicine |

***** Each seminar will be held in Japanese. *****

# Approval of Credits of Elective Subject in Doctoral Course,

# creditD3 Medicine and Life Science Training
# (Subject code 22220)

1. In the wake of realization of doctoral course lessons in the graduate school, presentations at academic meetings, such as academic conferences and lecture meetings, under the sponsorship of academic societies and universities, but not under the sponsorship of private organizations will be approved as credits.

2. “D3 Medicine and Life Science Training” is an elective subject in the doctoral course and up to a maximum of 2 credits can be awarded from presentations at academic conferences. (Refer to the list of lecture course/subject and credit in the syllabus.)

3. The criteria for credit approval are stipulated below. In addition, academic meetings that meet the above criteria such as academic conferences, lecture meetings and symposiums, will be judged by the committee of the postgraduate education.

1) In international academic meetings such as conferences, meetings, and symposiums, which are held domestically and abroad, or in national conferences and study meetings, which are held domestically, attendance as a leading presenter of a poster or an oral presentation as the first author of the abstract will be approved for a maximum of 2 credits.

2) In local academic meetings, such as conferences, lecture meetings and seminars, leading a poster or oral presentation as the first author of the abstract will be approved for a maximum of 1 credit.

For relation of the term of academic meetings and the number of credits to be approved, refer to the detailed regulations as shown in the next page.

4. How to apply for credits and the process of approving credits (The stipulations of this matter and the necessary forms are published on the website for the Graduate School of Medical Sciences and can be downloaded from the website).

1) Graduate students should record and submit the necessary information. Record in the prescribed application form (Refer to Format 1) the names of academic meetings, the term of the meetings and reports. Submit the written form to the Educational Affairs Planning Section (Ext. 5029) with 1) a certificate of participation (a copy is acceptable), 2) a copy of the program in which the presentation is published in and 3) a copy of the abstract that the student has published as a leading presenter. In principle, submit the forms within the same academic year as conference participation. The application form will be examined by the committee of the postgraduate education (generally held on every third Wednesday).

2) The committee of the postgraduate education will review all submissions and calculate credit based on the detailed regulations (Attachment 1). The credits will be calculated, and when they reach 2 or more, they will be given to SOSEKI by the Educational Affairs Planning Section. Students need to view SOSEKI to check their acquired credits. If the number of credits doesn’t reach 2, it will not be approved (0 credits).

3) For the credit application, “Kumamoto University” shall be indicated as your affiliation. If your affiliation is not Kumamoto University, your academic supervisor shall be included in your co-speakers.

4) A credit application would be accepted by attending a meeting online as well, only when the school educational committee accepts it. A participant certification of such meeting or an approval from the academic supervisor can be submitted for the required submission, 1)-1).

# The Detailed Regulations for Approving the Number of Credits in D3 Medicine and Life Science Training

In a faculty meeting on May 28, 2008, it was approved that beginning from the academic year of 2009, students can acquire up to a maximum of 2 credits as D3 Medicine and Life Science Training (which is an elective subject in the doctoral course) by participating in academic meetings as a leading presenter. The detailed regulations of credit approval are stipulated below.

1. Presentations at academic meetings given in 2008 by students who entered in the academic year of 2008 can be approved for credit. However, the application form and the documents that show proof of the students' presentations must be submitted within the 2008 academic year.

2. The relation between the term of academic meetings and the number of credits to be approved is based on the following criteria.

1) The maximum credits will be given for participation in three (3) day academic meetings. "Riron" lecture-style classes, are lecture courses in a subject that consist of fifteen (15) 90-minute sessions (32.5 hours in total). These are worth 2 credits. Academic meetings are generally held from 8 a.m. to 6 p.m. It can be considered that three days participation in academic meetings is equivalent to about thirty (30) hours of study in a regular class.

2) An academic meeting, which is held for half a day should be counted one sixth (1/6) of one credit. For example, one third (1/3) of the stipulated maximum credits should be given by an academic meeting held for one (1) day, a half (1/2) for one and a half (1 1/2) days and two thirds (2/3) for two (2) days.

3) Specific examples of calculating credits:
When a student gives a presentation as the leading presenter at international meetings or domestic national academic meetings held for three days or more, 2 credits should be given. When meetings are held for one day, two thirds (2/3) of one credit will be given, when they are held for one and a half days, one (1) credit should be given, and when they are held for two days, four thirds (4/3) should be given.

When a student gives a presentation as the leading presenter at local academic meetings held for two days, two thirds (2/3) of one credit should be given, when meetings are held for one day, one third (1/3) of one credit should be given and when they are held for half a day, one sixth (1/6) of one credit should be given.

3. When the number of days a student participate in does not match the stipulations above, credits to be awarded will be decided, after deliberations, by the committee of the postgraduate education.

(Format 1)

**Application Form for Credits of**
**D3 Medicine and Life Science Training: (Presentations at academic meetings)**

Application date: (year/month/day)

| | | | |
|---|---|---|---|
| Name: | ___ Year | Student number: | Affiliation : |
| Course name (if applicable): Phone number:<br>E-mail address: | | | |
| Name of academic meeting: | | | |
| Date of meeting (y/m/d): ～ | | City and venue of meeting: | |
| Date when the applicant participated in the meeting(y/m/d): ～ (_____ days) | | | |
| Presenters' names (all): | | | |
| Title of the presentation: (circle one) oral poster | | | |
| The number of credits to be applied for approval<br>(Refer to the detailed regulations in Attachment 1 about how to calculate): _____ credits | | | |
| Report about what you have learned through participating in the academic meeting (Write 200 words or more below.) | | | |

Submit 1) a certificate of participation in the academic meeting (a copy is acceptable), 2) a copy of the program in which the presentation is published in, 3) a copy of the abstract that the student has published as a leading presenter in written form together with this application form to Student Affairs Section. (Screening for approval of credits will be conducted in the committee of the postgraduate education, which is held on every third Wednesday.)

If you have lost the participant certification of the meeting to submit or the meeting was held online, you shall submit Form 2. "Appeal for D3 Medicine and Life Science Training (Conference Presentation)"

(Format 2)

# Appeal for D3 Medicine and Life Science Training (Conference Presentation)

Student ID No.: _____

Affiliation: _____

Name (hand-writing): _____

Academic supervisor (hand-writing): _____

| |
|---|
| Name of Conference: |
| Appeals: |

# Academic Year 2023, D5: International Biomedical Research Seminars

- Place: Meeting Lounge, IRCMS 1F (virtual seminars due to the pandemic)
- Time & Date: From 16:00 (usually on Wednesday; may be adjusted due to time difference)

The "D5 International Biomedical Research Seminars" course will be offered by International Research Center for Medical Sciences (IRCMS). It will run from April 2023 to March 2024, with lectures given by scientists who are affiliated with IRCMS or in collaboration with researchers at IRCMS. The lectures will be given in English, and by leading scientists in the relevant research field. Students will be taught: 1) how normal physiological functions are maintained in the human body; 2) how these systems become abnormal under certain pathophysiologic conditions; 3) why stem cells are important in animal development and homeostasis; 4) how stem cell-based approaches can help us understand disease mechanisms and find potential cure for diseases related to stem cell malfunction (e.g., cancer, aging).

| No | Schedule | Lecturer | The title for the lecture | Title / Affiliation |
|---|---|---|---|---|
| ~~1.~~ | ~~April~~ | ~~Ruby Huang~~ | ~~TBA~~ | ~~Professor, School of Medicine, National Taiwan University, Taiwan~~ |
| 2. | May | Takahiro Masuda | TBA | Professor, Medical Institute of Bioregulation, Kyushu University, Japan |
| 3. | June | Mari Sato | TBA | Associate Professor, Faculty of Dental Medicine, Division of Dental Medicine, Department of Health Science, Hokkaido University, Japan |
| 4. | July | Luis Tiago | TBA | Sir Henry Dale Fellow, Faculty of Medicine, Department of Immunology and Inflammation, Imperial College London, UK |
| 5. | August | Jing Huang | TBA | Senior Investigator, Head, Cancer and Stem Cell Epigenetics Section, Center for Cancer Research, The National Institutes of Health (NIH), USA |
| 6. | September | Akihiko Yoshimura | TBA | Professor, Department of Microbiology and Immunology, Graduate School of Medicine, Keio University, Japan |
| 7. | October | Fanyan Wei | TBA | Professor, Department of Modomics Biology and Medicine, IDAC, Tohoku University, Japan |
| 8. | November | Paul Liu | TBA | Deputy Scientific Director, Head of Oncogenesis and Development Section, The National Institutes of Health (NIH), USA |
| 9. | December | TBA | TBA | |
| 10. | January | Takaaki Akaike | TBA | Professor, Department of Environmental Medicine and Molecular Toxicology, Tohoku University, Japan |
| 11. | February | TBA | TBA | |
| 12. | March | Xin Sun | TBA | Professor, Department of Cell and Developmental Biology, University of California San Diego (UCSD), USA |

Note: The schedule or venue of these lectures might change due to various reasons. Please check the details with the seminar guide leaflet distributed to each Department beforehand. Also, please check our website for the latest information. We might add the other seminar than the above.
http://www.medphas.kumamoto-u.ac.jp/medgrad/gakunai/seminar/seminar3/

# A report format of "D5: International Biomedical Research Seminars"

Write 2 essays based on 2 talks chosen from the seminar "D5: International Biomedical Research Seminars". Length of the essays should be 250-500 words. "D5: International Biomedical Research Seminars" requires students to attend more than 10 lectures as well as to submit at least 2 reports for credit before completion of their thesis research. Send each essay to the IRCMS within one month by E-mail (ircms@jimu.kumamoto-u.ac.jp, not by hard copy or any other digital media). The file of the essay should be included in the E-mail both in an attached file and in the text. A carbon copy E-mail should be also sent to Medical Faculty Educational Affairs Planning Section (iyg-igaku-3@jimu.kumamoto-u.ac.jp). Attendance will be taken in every talk by signing your name at the entrance of the lecture room.

Graduate School of Medical Sciences, Medical Course (Doctor) "D5: International Biomedical Research Seminars" Report

| Student：Grade　Registered number　Division　Name |
|---|
| Title of talk: |
| Talker: |
| Date: |
| Place: |
| A body of essay:　Fill this A4 sheet with 250-500 words |

# Course Work subject

## (Medical Experiment Course)

【Subject code : 10170（Master's Elective Subject）】【Subject code : 20200（Doctoral Compulsory Subject）】

***Note that the codes are different for master's and doctoral students.**

# Academic Year 2023 Graduate School's Medical Experiment Course

Location : Lecture Room 2(Medical Education & Library Building 3F)

| Date | AM | | PM | |
|---|---|---|---|---|
| **April 5 (Wed.)** | 1 8:45 ～ 10:15 | Introduction to recombinant DNA technique (Molecular Genetics : TERADA Kazutoyo) | 3 13:15 ～ 14:45 | Principle and application of polymerase chain reaction (Medical Biochemistry : SATO Yoshifumi) |
| | 2 10:30 ～ 12:00 | Gene Trasfer Technique (Molecular Physiology : CHUJO Takeshi) | 15:00 ～ 16:30 | |
| **April 6 (Thu.)** | 4 8:45 ～ 10:15 | Cell imaging and quantitative analysis (Chromosome Biology: ISHIGURO Keiichiro) | 6 13:15 ～ 14:45 | Analysis of Transcriptional Regulation (Cell Signaling and Metabolic Medicine : KANAMORI Yohei) |
| | 5 10:30 ～ 12:00 | Protein Purification (General Methods) (Molecular Cell Biology : YAMANAKA Kunitoshi ) | 7 15:00 ～ 16:30 | Pharmacokinetics (Pharmacology and Therapeutics : SARUWATARI Jyunji) |
| **April 10 (Mon.)** | 8 8:45 ～ 10:15 | Production of polyclonal and monoclonal antibodies (Immunology : IRIE Atsushi) | 9 13:15 ～ 14:45 | Analytical methods for intracellular signaling (Infection and Hematopoiesis : SUZU Shinya) |
| | 10:30 ～ 12:00 | | 10 15:00 ～ 16:30 | Immunohistochemistry (Cell Pathology : YANO Hiromu) |
| **April 11 (Tue.)** | | | | |
| | 11 10:30 ～ 12:00 | Basic Methods in Immunology (Immunology : IRIE Atsushi) | 12 15:00 ～ 16:30 | Proteomics (Tumor Genetics and Biology : ARAKI Norie) |
| **April 12 (Wed.)** | 13 8:45 ～ 10:15 | Experimental animals and animal Experimentations I (Division of Microbiology and Genetics: TORIGOE Daisuke) | 15 | Reproductive Engineering Techniques (Reproductive Engineering: TAKEO Toru) |
| | 14 10:30 ～ 12:00 | Experimental animals and animal Experimentations II (Division of Microbiology and Genetics: TORIGOE Daisuke) | 16 15:00 ～ 16:30 | In situ hybridization (Molecular Pharmacology : KIKUCHI Koji) |
| **April 13 (Thu.)** | 17 8:45 ～ 10:15 | Practice and Guidance for Biological Laboratory Safety (Medical Virology: MAEDA Yosuke) | | |
| | 18 10:30 ～ 12:00 | Introduction to flowcytometry (Immunology : IRIE Atsushi)) | | |
| **e-learning only** | 19 | Experiment study and safety control 【e-learning only】 (Environmental Safety Center: YAMAGUCHI Yoshihiro) | 20 | Guidance for Living Modified Organism (LMO) 【e-learning only】 (Division of Genomics : ARAKI Masatake) |
| | | | 21 | Methods for Literature Search 【e-learning only】 (Anatomy : FUKUDA Takaichi) |

# Developmental Biology and Regenerative Medicine

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-024-67-1 | 2023whole year | Graduate School of Medical Sciences (22140) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Special Lecture "Tokuron" on Developmental Biology and Regenerative Medicine I(E1 Special Lecture "Tokuron" on Developmental Biology and Regenerative Medicine I) | OGAWA Minetaro, SHIMAMURA Kenji, ERA Takumi, ONO Yusuke, YAMANAKA Kunitoshi, NAKAO Mitsuyoshi, NISHINAKAMURA Ryuichi, OKANO Masaki, OKAE Hiroaki |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥50% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥10% 4.Social leadership drive ‥‥10% |

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| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint and/or OHP will be used in the lectures, and active participation in the discussion is encouraged. E-learning and reports are considered for those who are regularly absent for unavoidable reasons. |
| Course Goals(授業の目的) | Developmental and regenerative medicine aims at curing diseases by revealing molecular mechanisms of organ development. In this course, you learn basic concepts and techniques used in this field. This course serves as introductory for those in the Course of Developmental Biology and Regenerative Medicine, and will also be useful for those in other programs, as you obtain essential knowledge of pluripotent stem cells and tissue stem cells, developmental mechanism of organogenesis derived from ectoderm, endoderm, and mesoderm, the molecular basis of epigenetic cell regulation in development and human diseases, and placental development. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students are expected to acquire professional competence to understand and explain the following subjects; (1) cell differentiation and growth, (2) pluripotent stem cells and tissue stem cells, (3) developmental mechanism of organogenesis derived from ectoderm, endoderm, and mesoderm, (4) molecular basis of epigenetic cell regulation in development and human diseases, (5) placental development.<br>【C level (C水準)】<br>Students are expected to acquire general competence to understand and explain the following subjects; (1) cell differentiation and growth, (2) pluripotent stem cells and tissue stem cells, (3) developmental mechanism of organogenesis derived from ectoderm, endoderm, and mesoderm, (4) molecular basis of epigenetic cell regulation in development and human diseases, (5) placental development. |
| Course Outline(授業の概要) | Following topics including the most recent progress will be shown and discussed in addition to reading original papers.<br>・ Stem cell and regenerative medicine<br>・ Development of hematopoietic stem cells<br>・ Development and regeneration of the nervous system<br>・ Cell lineage and developmental regulation of the nematode C. elegans<br>・ C. elegans as a model for human diseases<br>・ Pregnancy and placental development<br>・ Skeletal muscle development and regeneration<br>・ Kidney development and regeneration<br>・ Epigenetic cell regulation in cell differentiation and transformation |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | 10/05 | Thu. 4th period. Takumi Era 【eE-0】 | Pluripotent and tissue stem cells |
| 2 | 10/12 | Thu. 4th period. Takumi Era 【eE-0】 | Stem cell, disease and clinical application |
| 3 | 10/19 | Thu. 4th period. Minetaro Ogawa | Development of the hematopoetic system |
| 4 | 10/26 | Thu. 4th period. Minetaro Ogawa | Development of hematopoetic stem cells |
| 5 | 11/02 | Thu. 4th period. Kenji Shimamura | Neural stem cell biology and regenerative medicine |
| 6 | 11/09 | Thu. 4th period. Kunitoshi Yamanaka | Cell lineage and developmental regulation of the nematode C. elegans |
| 7 | 11/16 | Thu. 4th period. Kunitoshi Yamanaka | C. elegans as a model for human diseases |
| 8 | 11/30 | Thu. 4th period. Hiroaki Okae | Pregnancy and placental development |
| 9 | 12/07 | no schedule | Annual Meeting of the MBSJ |
| 10 | 12/14 | Thu. 4th period. Yusuke Ono【eE-0】 | Skeletal muscle development and regeneration |
| 11 | 12/21 | Thu. 4th period. Yusuke Ono【eE-0】 | Skeletal muscle plasticity |
| 12 | 01/11 | Thu. 4th period. Ryuichi Nishinakamura | Development of kidney__ |
| 13 | 01/18 | Thu. 4th period. Masaki Okano | Regulatory mechanism of epigenetics in development |
| 14 | 01/25 | Thu. 4th period. Mitsuyoshi Nakao 【eE-0】 | Epigenetic medicine I__ |
| 15 | 02/01 | Thu. 4th period. Mitsuyoshi Nakao 【eE-0】 | Epigenetic medicine II |

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| Estimated out-of-class study time | 62 hours |
| Required Textbook(テキスト) | Textbooks are not specified, and handouts will be distributed. |
| Reading List(参考文献) | “Essential Developmental Biology” (3rd edition by Slack JMW.) Blackwell Publishing (2012)<br>“C. ELEGANS II” (ed. D.L. Riddle, T. Blumenthal, B.J. Meyer, & J.R. Priess) CSHL Press (1997)<br>“EPIGENETICS” (edited by David Allis et al.) Cold Spring Harbor Laboratory Press (2007) |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and | Grading will be based on the student's understanding of the course subject matter as well as participation in |

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| Criteria(評価方法・基準) | class discussions. The students' understanding will be evaluated on the basis of reports or exams to be scored from 0 to 100 for each session. Final grades will be based on the average of the top 10 scores. |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-025-79-1 | 2023whole year | Graduate School of Medical Sciences (22150) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Special Lecture "Tokuron" on Developmental Biology and Regenerative Medicine II(E2) | NIWA Hitoshi, SUGAWARA Yasuhiko, ISHIGURO Keiichiro, SHINDO Asako, NAKAMURA Kimitoshi, UEDA Mitsuharu, Jiyouno Hirofumi, FUKUSHIMA Satoshi, TAKIZAWA Hitoshi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥60% 2.Profound inter-disciplinary knowledge ‥‥25% 3.Global perspective and ability to take initiative action ‥‥10% 4.Social leadership drive ‥‥5% |

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| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint and/or OHP will be used in the lectures, and active participation in discussion is encouraged. |
| Course Goals(授業の目的) | Developmental and regenerative medicine aims at curing diseases by revealing molecular mechanisms of organ development and the origin of diseases in order to develop a diagnosis and treatment for the diseases. Furthermore, this course will up-to-date with the present status of the regeneration medicines, the on going investigations on replacement of lost cells, tissues or organs. In this course, you will obtain essential knowledge on embryonic stem cells, tissue stem cells, their properties and application on regenerative medicine, mechanisms of development and repairs of epithelial tissues, methodologies in the regenerative medicine of sensory and circulatory organ, tissue injury and restoration surgery, genetic defects and their treatments, status and problems in transplant medicine. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>During attending the lectures in this course, students are expected to be familiar with general basics of developmental biology and specific developmental biology and mechanisms of diseases in various organs including the liver, lung, heart, nervous tissue, inner ear and connective tissues.<br>【C level (C水準)】 |
| Course Outline(授業の概要) | In this course, lectures on the following fields will be given: ・Regenerative medicine using embryonic stem cells and tissue stem cells ・properties and application of endodermal tissue stem cells ・growth, differentiation and abnormalities of epithelial cells ・damage, repair and mechanisms of tissue reconstitution ・pathological analyses of hereditary amyloidosis ・development of treatment for hereditary amyloidosis ・development and regeneration of skin（recovery of injury） ・denervation and reinnervation of the larynx ・Physiology and pathophysiology of hematopoietic stem cells ・basic and clinic on vascular neogenesis ・treatment of ischemic heart disease ・pathological analysis and treatment of genetic diseases ・tissue and organ grafts in general, present status and problems of liver transplant |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | 【1st grade】<br>Hitoshi NIWA 【eE-0】 | Self-renewal of pluripotent stem cells |
| 2 | | Hitoshi NIWA 【eE-0】 | Differentiation of pluripotent stem cells |
| 3 | 03/11 | 4th period Takaaki ITO | Growth, differentiation and morphological abnormalities of epithelial cells |
| 4 | 03/11 | 5th period Kimitoshi NAKAMURA | Regenerative medicine for diseases of childhood |
| 5 | 03/18 | 4th period Asako SHINDO | Development and homeostasis of embryonic epithelial tissues |
| 6 | 02/08 | 【2nd grade】<br>4th period Mitsuharu UEDA | Pathological analyses of hereditary amyloidosis |
| 7 | 02/15 | 4th period Hirofumi JONO | Development of treatment for hereditary amyloidosis |
| 8 | | Satoshi FUKUSHIMA 【eJ-0】 | Development and regeneration of skin（recovery of injury） |
| 9 | 02/29 | 4th period Hitoshi TAKIZAWA | Physiology of hematopoietic stem cell |
| 10 | 03/07 | 4th period Hitoshi TAKIZAWA | Pathophysiology of hematopoietic stem cell |
| 11 | 02/08 | 【3rd grade】<br>4th period Keiichiro ISHIGURO | Chromosomal disorders in somatic and germ cells |
| 12 | 02/15 | 4th period Keiichiro ISHIGURO | Germ cells for regenerative medicine |
| 13 | 02/22 | 4th period Kimitoshi NAKAMURA | Pathological analysis and treatment of genetic diseases |
| 14 | 02/29 | 4th period Yoshihiko SUGAWARA | Present status and problems of organ transplants |
| 15 | 03/07 | 4th period Yoshihiko SUGAWARA | Liver grafts from brain-dead and living donor |

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| Estimated out-of-class study time | |
| Required Textbook(テキスト) | |
| Reading List(参考文献) | |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Grading will be based on active class participation, paper summaries, and the final report. Grading will be based on the student's understanding of the course subject matter. The students' understanding will be evaluated on the basis of papers and quizzes related to the topics dealt with in class to be scored from 0 to 100. Final grades |

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| Assessment Methods and Criteria(評価方法・基準) | will be based on the average score of the papers and quizzes as well as participation in class discussions. |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-026-79-1 | 2023whole year | Graduate School of Medical Sciences (22160) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Special Lecture "Tokuron" on Transplantation immunology(E3) | OSHIUMI Hiroyuki, IRIE Atsushi, Hibi Taizou |

Goals with their ratio(学修成果とその割合)

1.Advanced expert knowledge, skill and research capability ‥‥25% 2.Profound inter-disciplinary knowledge ‥‥25% 3.Global perspective and ability to take initiative action ‥‥25% 4.Social leadership drive ‥‥25%

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|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint and/or OHP will be used in the lectures, and active participation in the discussion is encouraged. Extra classes or video lectures are considered for those who are regularly absent for unavoidable reasons. |
| Course Goals(授業の目的) | The goals of this lecture are to understand the followings:<br>(1) The mechanism of rejection in allo-transplantation<br>(2) Allo-antigens that induce allo-reactivity<br>(3) The structure and function of human major histocompatibility complex (HLA)<br>(4) Basic immunology and clinical immuno-regulation therapy to avoid graft-rejection<br>(5) Current status and future direction of transplantation medicine |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Understanding of the mechanisms of rejection in allo-transplantation, the structures of major histocompatibility complexes and the basics in clinical immuno-regulation therapy and transplantation medicine<br>【C level (C水準)】 |
| Course Outline(授業の概要) | To treat the patients, transplantation of the cells, tissues, or organs obtained from donors is broadly carried out. However, there are structural differences of proteins, lipids, and sugars between different individuals of the same species, due to genetic polymorphism. Therefore, following the transplantation of a graft obtained from an allogeneic donor, the recipient immune system is activated by such polymorphic molecules and reject the graft. Among such allogeneic antigens, MHC are the strongest in stimulating allo-reactive immune response. We will lecture on the basic and clinical immunology related to the methodology to avoid such rejection. In addition, we will provide the latest information on the issue of clinical transplantation and regenerative medicine. We will lecture on the transplantation immunology at the level of cells, tissues, and organs, from the viewpoint of both basic and clinical medicine, including recent advances in the research by the instructors. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | 10/16 | Mon 4th period, Hiroyuki Oshiumi | Structure and function of HLA class I |
| 2 | 10/23 | Mon 4th period, Hiroyuki Oshiumi eE-J0, eJ-0 | Structure and function of HLA class II |
| 3 | 10/30 | Mon 4th period, Atsushi Irie | Polymorphism of MHC and T cell- activation signals |
| 4 | 11/06 | Mon 4th period, Atsushi Irie | Recognition of alloantigens by T cells |
| 5 | 11/13 | Mon 4th period, Hiroyuki Oshiumi eE-J0, eJ-0 | HLA and anti-tumor immunity |
| 6 | 11/20 | Mon 4th period, Atsushi Irie | Major and minor histocompatibility antigens |
| 7 | 11/27 | Mon 4th period, Atsushi Irie | Immune response and dendritic cells |
| 8 | 12/04 | Mon 4th period, Atsushi Irie | Cytokine and Chemokine |
| 9 | 12/11 | Mon 4th period, Hiroyuki Oshiumi eE-J0, eJ-0 | Graft versus Host reaction（GVHR） |
| 10 | 12/18 | Mon 4th period, Ken Takashima | Immune tolerance |
| 11 | 12/25 | Mon 4th period, Hiroyuki Oshiumi, | Host immune responses to xenografts |
| 12 | 01/15 | Mon 4th period, Hiroyuki Oshiumi eE-J0, eJ-0 | Transplantation immunology and Stem cell |
| 13 | 01/22 | Mon 4th period, Ken Takashima | Immunosuppressant and transplantation |
| 14 | 01/29 | Mon 4th period, Taizo Hibi eE-J0, eJ-0 | Transplantation in Japan and the world |
| 15 | 02/05 | Mon 4th period, Taizo Hibi eE-J0, eJ-0 | Liver transplant from living donor |

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| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Textbooks are not specified, and handouts will be distributed. |
| Reading List(参考文献) | ・"The Immune System" by Peter Parham. Garland Publishing Inc. New York and London, 2004<br>・"Janeway’s Immunobiology Seventh Edition" by Kenneth Murphy, Paul Travers, Mark Walport. Garland Science, Taylor & Francis Group LLC. New York and Abingdon, 2008.<br>・”A history of transplantation immunology” (Leslie Brent) Academic Press 1997 |
| Enrollment Conditions(履修条件) | It is recommended for you to read a syllabus and indicated recommended readings in advance. |
| Assessment Methods and Criteria(評価方法・基準) | Achievement of the Objectives will be evaluated by active class participation and the reports of which the theme will be specified after the lectures. Grading will be based on the student's understanding of the course subject matter. The students' understanding will be evaluated on the basis of the reports and brief examinations related to the topics dealt with in the class to be scored from 0 to 100. Final grades will be based on the average of the best 10 scores of the reports and brief examinations as well as the participation in class discussions. |
| Language Used in Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |

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| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-027-81-1 | 2023whole year | Graduate School of Medical Sciences (22170) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Special Lecture "Tokuron" on Bioethics(E4) | KADOOKA Yasuhiro |

| Goals with their ratio(学修成果とその割合) |
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| 1.Advanced expert knowledge, skill and research capability ‥‥25% 2.Profound inter-disciplinary knowledge ‥‥50% 3.Global perspective and ability to take initiative action ‥‥25% |

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| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | E-learning system will be provided for classes on research ethics/integrity. Classes of "Highly Advanced Medicine" and "Step-up lecture on RCR" are held in intensive courses. Several pedagogic strategies including video-lecture and e-learning will be used according to student condition and COVID-19 status. |
| Course Goals(授業の目的) | This special lecture on bioethics will deal with ethical issues involved in developmental biology and regenerative medicine, which may be relevant to organ transplantation, human stem cell research, genetic research and technologies, and so on. This course is aimed to provide life science researchers with adequate knowledge and understanding concerning major bioethical issues and norms to help them conduct ethically sound researches. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students are able to<br>1. recognize a variety of issues on biomedical ethics in life sciences, highly advanced biomedical technologies and biomedical researches, and identify fundamental problems inherent in them,<br>2. make ethically consistent discussion basing on relevant norms of biomedical ethics,<br>3. express their own ethical views, and<br>4. comprehend academic materials in the field of biomedical ethics.<br>【C level (C水準)】<br>1. to understand ethical issues related to life sciences, highly advanced biomedical technologies and biomedical researches, and<br>2. to understand ethical views fundamental to biomedical ethics. |
| Course Outline(授業の概要) | The course will consist of lectures concerning important bioethical issues and principles, small group discussion, and students' presentation. Participating students may be required to critically read bioethical papers and present their own arguments. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | 【1st grade】<br>Responsible Conduct of Research (RCR) 1 | eAPRIN (CITI e-learning system) |
| 2 | | RCR 2 | eAPRIN (CITI e-learning system) |
| 3 | | RCR 3 | eAPRIN (CITI e-learning system) |
| 4 | | RCR 4 | eAPRIN (CITI e-learning system) |
| 5 | | RCR 5 | eAPRIN (CITI e-learning system) |
| 6 | | 【2nd grade】<br>Highly advanced medicine 1 | Organ Transplantation |
| 7 | | Highly advanced medicine 2 | Regenerative medicine |
| 8 | | Highly advanced medicine 3 | Gene diagnosis and therapy |
| 9 | | Highly advanced medicine 4 | Assisted reproductive technology |
| 10 | | Highly advanced medicine 5 | Enhancement |
| 11 | | 【3rd grade】<br>Step-up lecture on RCR 1 | Professionalism of scientists |
| 12 | | Step-up lecture on RCR 2 | Conflict of Interest |
| 13 | | Step-up lecture on RCR 3 | Research Integrity |
| 14 | | Step-up lecture on RCR 4 | Researchers' Social Responsibilities |
| 15 | | Step-up lecture on RCR 5 | Science Communication |

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| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Textbooks are not specified and handouts are provided. |
| Reading List(参考文献) | The Hastings Center. Bioethics Briefings (https://www.thehastingscenter.org/publications-resources/hastings-center-bioethics-briefings/)<br>Ravitsky V. et al. (Edition) The Penn Center Guide to Bioethics. Springer, 2009.<br>Bonnie Steinbock (Edition) The Oxford handbook of Bioethics. Oxford University Press, 2007.<br>Singer PA. et al (Edition) The Cambridge Textbook of Bioethics. Cambridge university Press, 2008.<br>Carl Mitchan (Editor in Chief) Encyclopedia of Science, Technology, and Ethics. Volume 1-4, Macmillan Reference USA, Thomson/Gale, 2005.<br>Beauchamp TL, Childress JF. Principles of Biomedical Ethics 4th edition. NY, Oxford University Press, 1994.<br>Alastair Campbell. Bioethics the basics. Routledge, 2013.<br>British Medical Association. Medical Ethics Today 3rd edition. London, BMJ, 2011.<br>and so on |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Students are evaluated for their course grades and credits based on the course hours completed, their understanding and knowledge earned about information in the research for bioethics, ability of summarizing and |

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| Assessment Methods and Criteria(評価方法・基準) | presenting bioethical deliberation of their own themes, and so on. Grading will be based on the student's understanding of the course subjects. |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Applicable (The teacher with academic degrees of bioethics and medicine, and practical work experiences including research and education on biomedical ethics, ethical review of medical research protocols, and clinical ethics support.) |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-117-99-1 | 2023whole year | Graduate School of Medical Sciences (22180) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Practice "Enshuu" on Developmental Biology and Regenerative Medicine I(Practice "Enshuu" on Developmental Biology and Regenerative Medicine I) | OGAWA Minetaro, NAKAO Mitsuyoshi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥30% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥20% 4.Social leadership drive ‥‥20% |

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|---|---|
| Type of Class(授業の形態) | Seminar |
| Teaching Method(授業の方法) | PBL, group work training |
| Course Goals(授業の目的) | Developmental and regenerative medicine is an extremely interdisciplinary science that involves embryology, cell biology, molecular biology, genetics, immunology, histology, reconstructive surgery, bioethics and other broad fields of biosciences. Characterizing pathological conditions and etiology and developing medical treatment for diseases from the viewpoint of developmental biology, as well as establishing regenerative medicine in an effort to repair ageing and injured tissues and organs, may need to surmount various critical problems that should be related to above interdisciplinary fields. Based on the knowledge learned in the special lectures "Tokuron", this practice intends to enhance the ability of approaching solution of problems from a multilateral perspective by advancing quest for an arbitrarily-selected issue through successive examinations of literatures and discussions. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students are expected to acquire the ability to approach solutions to problems from a multilateral perspective based on their knowledge in interdisciplinary fields.<br>【C level (C水準)】<br>Students are expected to acquire the ability to approach solutions to problems from a perspective based on their knowledge in the fields. |
| Course Outline(授業の概要) | Students form a small group and raise an issue related to developmental and regenerative medicine. (An example of the issue might be finding a way to recover kidney function avoiding relying on dialysis treatment.) Students then find obstacles to settlement of the issue and examine literatures cooperatively with the group members and make discussions in order to explore methodology and strategy to solve the raised problems. The instructors listed above appropriately support the group work to facilitate learning. Results of the study are summarized in a report. Students will also have opportunities for the presentation of the results. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Issues will be raised by students. | Issues will be raised by students. |

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| Estimated out-of-class study time | 60 hours |
| Required Textbook(テキスト) | |
| Reading List(参考文献) | |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Grading will be based on active participation in the group work as well as the final report and presentation. Focus of evaluation are (i) whether problems are appropriately raised from the selected issue, (ii) whether strategies to solve the problems are appropriately presented, (iii) whether both technical and ethical aspects are considered. |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-118-99-1 | 2023whole year | Graduate School of Medical Sciences (22190) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Practice "Enshuu" on Developmental Biology and Regenerative Medicine II(Practice "Enshuu" on Developmental Biology and Regenerative Medicine II) | OGAWA Minetaro, NAKAO Mitsuyoshi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥50% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥10% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Lecture and Seminar |
| Teaching Method(授業の方法) | Students attend the seminars that are authorized by the course and write reports. The reports should include summary of the lectures and his/her own discussion about the topics. In principle, one hour seminar is suitable for one report. |
| Course Goals(授業の目的) | Developmental and regenerative medicine is an interdisciplinary science that is rapidly evolving as a new field of life science. This practice consists of lectures from researchers who work on developmental biology and regenerative medicine in Japan and overseas. Researchers committed to cutting-edge research will be invited and present latest developments of their own. Students are encouraged to attend the seminars to acquire up-to-date knowledge of regenerative medicine and related fields that may not be covered in the special lectures "Tokuron". |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students are expected to acquire competence to understand the latest research developments of regenerative medicine.<br>【C level (C水準)】<br>Students are expected to acquire competence to understand the research developments of regenerative medicine. |
| Course Outline(授業の概要) | Topics of the seminars may encompass full range of issues that are related to developmental biology and regenerative medicine, including cell engineering, genetic engineering, biomedical materials, reproductive medicine and bioinformatics. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | the latest research developments of regenerative medicine | the latest research developments of regenerative medicine |

| | |
|---|---|
| Estimated out-of-class study time | 75 hours |
| Required Textbook(テキスト) | |
| Reading List(参考文献) | |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Students are obligated to attend 15 or more lectures and submit reports. The attendance can be extended to four years at maximum. Grading will be based on the reports. |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-119-99-1 | 2023whole year | Graduate School of Medical Sciences (22200) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Practice "Enshuu" on Developmental Biology and Regenerative Medicine III(Practice "Enshuu" on Developmental Biology and Regenerative Medicine III) | OGAWA Minetaro, NAKAO Mitsuyoshi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥30% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥20% 4.Social leadership drive ‥‥20% |

| | |
|---|---|
| Type of Class(授業の形態) | Seminar |
| Teaching Method(授業の方法) | Students attend domestic or international conferences on developmental biology, regenerative medicine and other related research fields, and present findings obtained from their own research. |
| Course Goals(授業の目的) | During the process of conducting research on developmental and regenerative medicine, it is necessary to present research findings and discuss with other scientists at domestic and international conferences. This practice aims at expanding capability to make a productive discussion on a subject presented by other researchers and to present and discuss own findings in an effective manner at an academic conference. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students are expected to acquire skills to make a productive discussion on a subject presented by other researchers and to present and discuss their own findings in an effective manner at an academic conference.<br>【C level (C水準)】<br>Students are expected to acquire skills to make a discussion on a subject presented by other researchers and to present and discuss their own findings at an academic conference. |
| Course Outline(授業の概要) | Students attend domestic or international conferences on developmental biology, regenerative medicine and other related research fields. In addition to discuss on the subjects presented by other researchers, students will present findings obtained from their own research in poster or oral sessions. The instructors listed above appropriately support discussions and preparations of presentation. Students finally write a report that includes the state of achievement of the activities at the conferences. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | student's own research theme | student's own research theme |

| | |
|---|---|
| Estimated out-of-class study time | 60 hours |
| Required Textbook(テキスト) | |
| Reading List(参考文献) | |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Students are obligated to attend and make a presentation in domestic or international conferences on developmental biology and regenerative medicine. Length of the activities at the conferences should be 4 days or more in sum total. Student should present their own research findings at least once in any of the conferences they attend. The attendance can be extended to four years at maximum. Grading will be based on the final report. |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-120-99-1 | 2023whole year | Graduate School of Medical Sciences (22210) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Practical Training “Jisshuu" on Developmental Biology and Regenerative Medicine(Practical Training “Jisshuu" on Developmental Biology and Regenerative Medicine) | OGAWA Minetaro, TOMIZAWA Kazuhito, SHIMAMURA Kenji, SONG Wen-Jie, YAMANAKA Kunitoshi, NAKAO Mitsuyoshi, NISHINAKAMURA Ryuichi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥50% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥10% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Practice |
| Teaching Method(授業の方法) | Each training course will be held in a laboratory in charge. First, the principle of a method or a technique will be lectured, then practical handling will be trained. Results and discussions must be surmmarized in a report. |
| Course Goals(授業の目的) | Various experimental methods and techniques are applied in the field of developmental biology and regenerative medicine, which is an interdisciplinary research based on cell biology, molecular biology, immunology and histology. For researchers in the field, it is required to learn such experimental methods and techniques practically. Even for researcher outside the filed, it is important to understand a background of the experimental methods and techniques, since it gives us a multilateral viewpoint and would support to resolve various problems in specific research fields. Principles and practical procedures for several important experimental methods and techniques were trained in practical training of Developmental Biology and Regenerative Medicine. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students are expected to acquire competence to understand principles and practical procedures for several advanced experimental methods and to perform them by themselves.<br>【C level (C水準)】<br>Students are expected to acquire competence to understand principles and practical procedures for several general experimental methods and to perform them by themselves. |
| Course Outline(授業の概要) | ・ Scanning electron microscopy（Brain Morphogenesis）<br>・ Fractionation and isolation of cells by FACS（Cell Differentiation）<br>・ Isolation of RNA/DNA and quantification by PCR（Medical Cell Biology）<br>・ Operant conditioning test, Open field test, Fear-conditioning test （Molecular Physiology）<br>・ Two-photon fluorescence microscopy for neurons（Sensory and Cognitive Physiology）<br>・ Lipofection, Western blot（Kidney Development）<br>・ Induction of protein expression in bacteria, protein purification（Molecular Cell Biology）<br><br>In this course, sessions in Practical Training of Metabolism and Cardiovascular Medicine could also be selected. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Schedule of each session will be forwarded to you separately. | Contents of each session will be forwarded to you separately. |

| | |
|---|---|
| Estimated out-of-class study time | 40 hours |
| Required Textbook(テキスト) | |
| Reading List(参考文献) | |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Students must participate in at least 8 sessions and submit reports for each session. Grading will be based on the student's understanding of the subject matter as well as activities in the classes. The students' understanding will be evaluated on the basis of reports to be scored from 0 to 100 for each session. Final grades will be based on the average of the top 8 scores. |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

# Educational Program for Advanced Research in Infectious Diseases and AIDS

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-004-99-2 | 2023whole year | Graduate School of Medical Sciences (25580) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Special Lecture I on Infectious Diseases and AIDS(B4 Infection and Immune Control) | SATO Yorifumi, KUWATA Takeo, IKEDA Masanori, KUBOTA Ryuji, OKADA Seiji, OSHIUMI Hiroyuki, MATSUI Hirotaka, MOTOZONO Chihiro, MATSUOKA Masao, SAWA Tomohiro, Maeda Yousuke, SUZU Shinya, NAKATA Hirotomo, IKEDA Terumasa, TANAKA Yasuhito |

Goals with their ratio(学修成果とその割合)

1.Advanced expert knowledge, skill and research capability ‥‥30% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥20% 4.Social leadership drive ‥‥20%

| | |
|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint will be used in the lectures, and active participation in the discussion is encouraged. Extra classes or video lectures are considered for those who are regularly absent for unavoidable reasons. (Before starting this course students will be informed of the individual lecture style of instructors in detail. ) |
| Course Goals(授業の目的) | The aim of this lecture series “Special Lecture I on Infectious Diseases and AIDS” is to learn following topics important for basic and clinical research of infectious diseases: (1) interaction between pathogen and host response, (2) molecular pathogenesis of viral infection, (3) immune control and vaccine research, (4) management of nosocomial/opportunistic infection, (5) diagnosis and treatment of emerging/re-emerging infectious diseases, (6) pathogenesis and treatment of infectious diseases. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students will learn following topics important for basic and clinical research of infectious diseases. Students will learn following topics important for basic and clinical research of infectious diseases. (1) interaction between pathogen and host response,(2) molecular pathogenesis of viral infection, (3) immune control and vaccine research, (4) management of nosocomial/opportunistic infection, (5) diagnosis and treatment of emerging/re-emerging infectious diseases, (6) Pathogenesis and treatment of HIV-1 infection.<br>【C level (C水準)】<br>Understanding for the following points.<br>(1) interaction between pathogen and host response<br>(2) molecular pathogenesis of viral infection<br>(3) immune control and vaccine research<br>(4) management of nosocomial/opportunistic infection<br>(5) diagnosis and treatment of emerging/re-emerging infectious diseases<br>(6) Pathogenesis and treatment of HIV-1 infection |
| Course Outline(授業の概要) | The course addresses the introduction (bacteriology, virology) and particulars of various pathogenic organisms (including gram-positive and negative bacteria, a DNA or RNA viruses) focusing on topics of pathogenesis, control and prevention of infectious diseases and emerging and reemerging infectious diseases. The course addresses protective immunity of host against infectious diseases including HIV-1 infection. Especially, recent topics such as the mechanism of T-cell recognition of the viral antigens, differentiation of immune cells from hematopoietic stem cells and the strategy for the development of effective vaccine against HIV-1 infection will be discussed. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Terumasa Ikeda【eE-O】 | Retrovirus life cycle |
| 2 | | Tomohiro Sawa【eE-O】 | Bacterial infection and pathogenesis |
| 3 | | Hiroyuki Oshiumi 【eE-O】 | Innate immune responses to pathogens |
| 4 | | Chihiro Motozono【eE-O】 | Cellular immune responses to pathogens |
| 5 | | Takeo Kuwata 【eE-O】 | Humoral immune responses to pathogens |
| 6 | | Yosuke Maeda 【eE-O】 | Pathogenesis of Mycobacterium tuberculosis and HIV confection |
| 7 | | Masao Matsuoka 【eE-O】 | Emerging/re-emerging infectious diseases |
| 8 | | Shinya Suzu 【eE-O】 | Retroviruses-host interaction |
| 9 | | Yorifumi Sato【eE-O】 | Retroviral infections and latency |
| 10 | | Masanori Ikeda 【eE-O】 | Molecular pathogenesis of hepatitis viruses |
| 11 | | Yasuhito Tanaka【eE-O】 | Hepatitis viruses and Liver cancer |
| 12 | | Ryuji Kubota【eE-O】 | Virus-induced neurological diseases |
| 13 | | Seiji Okada 【eE-O】 | Animal model research in infectious diseases |
| 14 | | Hirotaka Matsui 【eE-O】 | Roles of laboratory medicine for infectious diseases |
| 15 | | Hirotomo Nakata【eE-O】 | Nosocomial/opportunistic infection |

| | |
|---|---|
| Estimated out-of-class study time | ・This course consists of content that requires hours (90 hours) of study. Since the class is 30 hours (2h x 15 frames) , 60 hours of pre- and post-study (including assignments) is necessary to understand the class. It is necessary to deepen. |
| Required Textbook(テキスト) | Textbooks are not specified, and handouts will be distributed. |
| Reading List(参考文献) | “Atlas of AIDS” edited by Gerald L. Mandell and Donna Mildvan. Current Medicine, Inc. Philadelphia, 2001.<br>“Infectious Diseases and Medical Microbiology” 2nd Edition, Abraham I. Braude et al., W.B. Saunders Company |

| | |
|---|---|
| Enrollment Conditions(履修条件) | Have basic knowledge concerning what is taught in this course. |
| Assessment Methods and Criteria(評価方法・基準) | This class consisted of a series of omnibus lectures by 15 lecturers as listed in the schedule. Evaluation will be done based on active class participation, examination test and/or report for subjects by each lecturer. In order to get credits students have to take more than 2/3 lectures. Grading will be based on the average of top 10 scores among ones obtained by the student. |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-028-81-1 | 2023whole year | Graduate School of Medical Sciences (25590) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Special Lecture II on Infectious Diseases and AIDS(Special Lecture II on Infectious Diseases and AIDS (F2)) | UENO Takamasa, GATANAGA Hiroyuki, MATANO Tetsuro, TACHIKAWA Ai, Maeda Kenji, SUGIURA Wataru, KANEKO Noriyo, NAKAHATA Shingo, MATSUSHITA Shuzo, NOMURA Takushi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥25% 2.Profound inter-disciplinary knowledge ‥‥35% 3.Global perspective and ability to take initiative action ‥‥35% 4.Social leadership drive ‥‥5% |

| | |
|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | PowerPoint will be used in the lectures, and active participation in the discussion is encouraged. Extra classes or video lectures are considered for those who are regularly absent for unavoidable reasons. (Before starting this course students will be informed of the individual lecture style of instructors in detail. ) |
| Course Goals(授業の目的) | The aim of this lecture series “Special Lecture II on Infectious Diseases and AIDS” is to learn following topics important for clinical, epidemiological and social science research of infectious diseases: (1) diagnosis and treatment of infections, (2) pathogenesis and complications in infectious diseases, (3) principles in medical statistics, (4) Surveillance and epidemiology in infections at domestic and global levels, (5) prevention of transmission and educational approaches to high risk groups, (6) antiviral drugs and viral resistance to drugs. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students will learn following topics important for clinical, epidemiological and social science research of infectious diseases: (1) diagnosis and treatment of infections, (2) pathogenesis and complications in infectious diseases, (3) principles in medical statistics, (4) Surveillance and epidemiology in infections at domestic and global levels, (5) prevention of transmission and educational approaches to high risk groups, (6) antiviral drugs and viral resistance to drugs.<br>【C level (C水準)】<br>Students will learn following topics important for clinical, epidemiological and social science research of infectious diseases: (1) diagnosis and treatment of infections, (2) pathogenesis and complications in infectious diseases, (3) principles in medical statistics, (4) Surveillance and epidemiology in infections at domestic and global levels, (5) prevention of transmission and educational approaches to high risk groups, (6) antiviral drugs and viral resistance to drugs. |
| Course Outline(授業の概要) | It would not be an overstatement if we say the history of mankind has been a long history of fight against infectious diseases. Researches on infectious diseases have been contributed enormously to the health and longevity of the life in developed nations at present. Development of diagnosis and treatment strategy against infectious diseases, management of comorbidities and complication, surveillance of infections, understanding epidemics provided a big impact to our society. These accomplishments have been made possible by accumulation and collaboration of research studies in clinical sciences, epidemiology, and social sciences. The up-to-date research results including the lecturers’ own experiences will be presented. In addition, students are expected to learn principles of statistical approaches in medical sciences. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Shuzo Matsushita 【eE-0】 | Overview in Clinical aspect of infectious diseases |
| 2 | | Shuzo Matsushita 【eE-0】 | Natural course and diagnosis of infectious diseases |
| 3 | | Takamasa Ueno 【eE-0】 | Symptoms of HIV infection and AIDS |
| 4 | | Takamasa Ueno 【eE-0】 | Management of comorbidities and complication in HIV infection |
| 5 | | Hiroyuki Gatanaga 【eE-0】 | Diagnosis and treatment of HIV infection |
| 6 | | Hiroyuki Gatanaga 【eE-0】 | Clinical pharmacology and long-term toxicity of antiviral agents |
| 7 | | Noriyo Kaneko 【eE-0】 | Social Aspects of HIV/AIDS |
| 8 | | Noriyo Kaneko 【eE-0】 | HIV Prevention for high risk population |
| 9 | | Wataru Sugiura 【eE-0】 | Current issues in global infections |
| 10 | | Wataru Sugiura 【eE-0】 | Genomics in Infectious diseases |
| 11 | | Ai Tachikawa 【eE-0】 | Novel approaches in immunotherapy |
| 12 | | Tetsuro Matano【eE-0】 | Vaccine-based control of infectious diseases |
| 13 | | Kenji Maeda【eE-0】 | Development of antiviral therapy against viral infection |
| 14 | | Shingo Nakahata【eE-0】 | Oncology in the area of viral infectious diseases |
| 15 | | Takushi Nomura【eE-0】 | Animal models for control of infectious diseases |

| | |
|---|---|
| Estimated out-of-class study time | This course consists of content that requires 90 hours of study.<br>Since the class is 30 hours long, the equivalent of 60 hours of prior and post-course study is required. |
| Required Textbook(テキスト) | Textbooks are not specified, and handouts will be distributed. |
| Reading List(参考文献) | “AIDS info Web site; http//AIDSinfo.nih.gov. Atlas of AIDS 3rd edition; Current Medicine, Inc.,2001. (edited by G,L.Mandelland D.Mildvan.)<br>Harrison’s principles of internal medicine 16th ed. |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and | Evaluation will be done based on active class participation, examination test and/or report for subjects by each |

| | |
|---|---|
| Criteria(評価方法・基準) | lecturer. In order to get credits students have to take more than 2/3 lectures. Grading will be based on the average of top 5 scores among ones obtained by the student. |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-158-82-1 | 2023whole year | Graduate School of Medical Sciences (25600) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Training I on Infectious Diseases and AIDS(Practice I on Infectious Diseases and AIDS) | SUZU Shinya, YASUNAGA Jun-ichirou |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥25% 2.Profound inter-disciplinary knowledge ‥‥40% 3.Global perspective and ability to take initiative action ‥‥25% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Training |
| Teaching Method(授業の方法) | Attend a 1-week training course as an observer, and lectures related to the diagnosis of infectious diseases, at Kumamoto University Hospital |
| Course Goals(授業の目的) | It is very important for basic researchers to know actual clinical practice. Especially on the infectious diseases field to see the advance of treatment allows their research motivations upward. The aim of this course is to visit clinic and see patients with infectious diseases. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students can learn importance of feedback of basic research outputs to clinics.<br>【C level (C水準)】 |
| Course Outline(授業の概要) | Attend a 1-week training course as an observer, that includes lectures on the following topics:<br>１． Introduction to Infectious Diseases<br>２． Overview on opportunistic infections<br>３． Patient support<br>４． Outpatient clinic and ward building tours<br>５． Clinical conference |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | July 8 - July12<br>１． Introduction to Infectious Diseases<br>２． Overview on opportunistic infections<br>３． Patient support<br>４． Outpatient clinic and ward building tour<br>５． Clinical conference | Attend practical training courses (as an observer) and lectures |

| | |
|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Nothing in particular |
| Reading List(参考文献) | Nothing in particular |
| Enrollment Conditions(履修条件) | Japanese Medical License holders will be allowed to see patients. Those that do not have a license, will focus on lectures, tours and rounds |
| Assessment Methods and Criteria(評価方法・基準) | Evaluation will be performed considering active participation and contribution during the course, in addition to the report |
| Language Used in Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-159-82-1 | 2023whole year | Graduate School of Medical Sciences (25610) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Training II on Infectious Diseases and AIDS(Training II on Infectious Diseases and AIDS) | SUZU Shinya, GATANAGA Hiroyuki |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥25% 2.Profound inter-disciplinary knowledge ‥‥40% 3.Global perspective and ability to take initiative action ‥‥25% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Training |
| Teaching Method(授業の方法) | Attend a 1-week training course on HIV clinical practice, the as an observer, at the Center Hospital of the National Center for Global Health and Medicine |
| Course Goals(授業の目的) | It is very important for basic researchers to know actual clinical practice. Especially on the HIV/AIDS field to see the advance of treatment allows their research motivations upward. The aim of this course is to visit HIV/AIDS clinic and see patients with HIV infection. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students can learn importance of feedback of basic research outputs to clinics.<br>【C level (C水準)】 |
| Course Outline(授業の概要) | During the 1-week course, you also receive lectures below.<br>1. HIV review<br>2. Opportunistic infections associated with HIV infection<br>3. Patient support<br>4. Meeting for out-patients<br>5. Meeting for in-patients |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | 1． Introduction to HIV infection<br>2． Overview on opportunistic infections<br>3． Patient support<br>4． Outpatient clinic and ward building tours<br>5． Clinical conference | Attend practical training courses (as an observer) and lectures |

| | |
|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Nothing in particular |
| Reading List(参考文献) | Nothing in particular |
| Enrollment Conditions(履修条件) | Only Japanese Medical License holders |
| Assessment Methods and Criteria(評価方法・基準) | Evaluation will be performed considering active participation and contribution during the course, in addition to the report. |
| Language Used in Instruction(使用言語) | Japanese |
| Textbook/Material Language(教科書・資料の言語) | Japanese |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-160-79-1 | 2023whole year | Graduate School of Medical Sciences (25620) | 1, 2, 3, 4 | 8 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Practice I on Infectious Diseases and AIDS(Practice I on Infectious Diseases and AIDS) | UENO Takamasa, GATANAGA Hiroyuki, MATANO Tetsuro, TACHIKAWA Ai, Maeda Kenji, OKADA Seiji, SATO Yorifumi, OSHIUMI Hiroyuki, MATSUI Hirotaka, Yasunaga Junichirou, SAWA Tomohiro, SUZU Shinya, IKEDA Terumasa, TANAKA Yasuhito |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥40% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥30% |

| | |
|---|---|
| Type of Class(授業の形態) | Practice |
| Teaching Method(授業の方法) | Journal club |
| Course Goals(授業の目的) | Students will participate in a journal club held in each laboratory listed above to critically evaluate recent articles in scientific literature (written in English). Students will be given opportunities to present and discuss the latest findings in the form of a journal review. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students will get the ability to critically evaluate recent articles also by having opportunity to present articles related to their research<br>【C level (C水準)】<br>Students will get the ability to critically evaluate recent articles also by having opportunity to present articles related to their research |
| Course Outline(授業の概要) | The format of each journal club may vary. Students are expected to follow the guidelines set forth by each laboratory. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Acquire knowledge related to own research topic | Acquire knowledge related to research topic during the reading meetings |

| | |
|---|---|
| Estimated out-of-class study time | This course consists of content that requires 360 hours of study.<br>Since the class is 240 hours long, the equivalent of 120 hours of prior and post-course study is required. |
| Required Textbook(テキスト) | Nothing in particular |
| Reading List(参考文献) | Nothing in particular |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Grades will be determined based on active participation and understanding of journal club materials |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-161-79-1 | 2023whole year | Graduate School of Medical Sciences (25630) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Practice II on Infectious Diseases and AIDS(Practice II on Infectious Diseases and AIDS) | OKADA Seiji |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥30% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥30% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Seminar |
| Teaching Method(授業の方法) | Gain insight on the latest progress in the research of infectious diseases and AIDS, by attending the International Symposium "Kumamoto AIDS Seminar" |
| Course Goals(授業の目的) | １．Learn about the latest progress by listening to the presentations of leading foreign and Japanese researchers in realted fields<br>２．Learn about presentation techniques, by presenting your own work in the form of a poster or oral presentation<br>３．Learn about discussion techiniques, by actively participating in poster or oral presentations |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>１．To be able to understand the latest advance in the research of infectious diseases and AIDS, and to be able to further discuss on the topic<br>２． Learn how to clearly explain the content of your research project to others, and to establish a scientific discussion<br>【C level (C水準)】<br>Understand the contents of invited lecture and summarize the point of lecture. |
| Course Outline(授業の概要) | Learn about global status of infectious diseases by joining Kumamoto AIDS seminar. Also, learn about discussion skill by making presentation in the international seminar. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | The 22th Kumamoto AIDS seminar | Learn about global status of infectious diseases by joining Kumamoto AIDS seminar. Also, learn about discussion skill by making presentation in the international seminar. |

| | |
|---|---|
| Estimated out-of-class study time | Pre-study is needed for better understanding the invited lectures. Carefully Read the ” Abstract book" in advance. |
| Required Textbook(テキスト) | Abstract book of Kumamoto AIDS seminar |
| Reading List(参考文献) | NONE |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Evaluation will be done by reports about presentation. The report contains abstract of the presentation, Q & A, and discussion. Students should submit the report within 2 weels after the seminar. |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-162-79-1 | 2023whole year | Graduate School of Medical Sciences (25640) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Practice III on Infectious Diseases and AIDS(Practice III on Infectious Diseases and AIDS (WYIS)) | IKEDA Terumasa, SATO Yorifumi, UENO Takamasa |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥40% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥30% |

| | |
|---|---|
| Type of Class(授業の形態) | Practice |
| Teaching Method(授業の方法) | Attend the Weely Young Investigator Seminar (WYIS) which involves across laboratories, ask questions and perform presentations related to your research. |
| Course Goals(授業の目的) | Gain skills and experience in making presentations and conducting scientific discussions, by attending the Weekly Young Investigator Seminar (WYIS) |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Improve skills and techniques in making presentations and conducting scientific discussions, by attending the Weekly Young Investigator Seminar (WYIS)<br>【C level (C水準)】<br>Improve skills and techniques in making presentations and conducting scientific discussions, by attending the Weekly Young Investigator Seminar (WYIS) |
| Course Outline(授業の概要) | Presentations in English (15minutes) and debates (15 minutes) will be conducted, in relation to research topics (including introduction, data interpretation, significance and discussion) |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Conduct research presentations and discussion at the WYIS seminar | Research presentations and scientific discussion by each student |

| | |
|---|---|
| Estimated out-of-class study time | This course consists of content that requires 90 hours of study.<br>Since the class is 60 hours long, the equivalent of 30 hours of prior and post-course study is required. |
| Required Textbook(テキスト) | |
| Reading List(参考文献) | |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Evaluation will be performed based on attendance, active participation, frequency with which students ask questions, content of research presentations, technical improvement. 15 or attendances, and 2 or more presentations are required |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-163-79-1 | 2023whole year | Graduate School of Medical Sciences (25650) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Practice IV on Infectious Diseases and AIDS(Practice IV on Infectious Diseases and AIDS) | SUZU Shinya |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥40% 2.Profound inter-disciplinary knowledge ‥‥40% 3.Global perspective and ability to take initiative action ‥‥10% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Seminar |
| Teaching Method(授業の方法) | By taking seminars presented by invited qualified speakers. |
| Course Goals(授業の目的) | Learn about the latest progress in the fields of Infectious Diseases, Medicine and Life Sciences, from external lecturers. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students are expected to be exposed by current research topics in vrious fields of research topics, across from infectious diseases and other basic and clinical medicine, as well as life sciences.<br>【C level (C水準)】 |
| Course Outline(授業の概要) | Students can take “D1 Medical and Life Science Seminar” and “D2 Learning from Experienced Doctor” or occasional seminar presented by invited speakers and Invited Speaker Seminar Series hosted by the Program instructors or by instructors’ laboratories. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | informed accordingly | informed accordingly |

| | |
|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Nothing in particular |
| Reading List(参考文献) | Nothing in particular |
| Enrollment Conditions(履修条件) | Nothing in particular |
| Assessment Methods and Criteria(評価方法・基準) | Students are required to attend more than 15 lectures/seminars before completion of the Thesis research. Also, students are required to submit essays/reports based on all lectures attended. |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-603-79-2 | 2023whole year | Graduate School of Medical Sciences (25660) | 1, 2, 3, 4 | 10 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Research on Infectious Diseases and AIDS(Research on Infectious Diseases and AIDS) | UENO Takamasa, GATANAGA Hiroyuki, MATANO Tetsuro, TACHIKAWA Ai, OKADA Seiji, SATO Yorifumi, OSHIUMI Hiroyuki, MATSUI Hirotaka, Yasunaga Junichirou, SAWA Tomohiro, SUZU Shinya, IKEDA Terumasa, TANAKA Yasuhito |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥80% 3.Global perspective and ability to take initiative action ‥‥20% |

| | |
|---|---|
| Type of Class(授業の形態) | Other |
| Teaching Method(授業の方法) | Research at each laboratory and thesis preparation |
| Course Goals(授業の目的) | Thesis preparation; students will report their research progress to their research mentor and interim review committee, and receive their comments/advices for further research progress. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students will perform research and prepare their thesis based on results obtained. Students will also present their research results at domestic/international conference(s) and publish their results in academic journal(s) as scientific paper(s).<br>【C level (C水準)】<br>Students will perform research and prepare their thesis based on results obtained. Students will also present their research results at domestic/international conference(s) and publish their results in academic journal(s) as scientific paper(s). |
| Course Outline(授業の概要) | Students will perform research at their laboratory and prepare their thesis. Students will also have an interim interview, and receive the comments/advices for further research progress, and present their research results at domestic/international conference(s). |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Research and thesis preparation | Research on Infectious Diseases and AIDS |

| | |
|---|---|
| Estimated out-of-class study time | This course consists of content that requires 300 hours of study.<br>Since the class is 240 hours long, the equivalent of 60 hours of prior and post-course study is required. |
| Required Textbook(テキスト) | Nothing in particular |
| Reading List(参考文献) | Nothing in particular |
| Enrollment Conditions(履修条件) | By the beginning of third year, students will have an interim interview, the committee of which consists of 3 members, and receive the comments/advices for further research progress. |
| Assessment Methods and Criteria(評価方法・基準) | Grade will be assessed based on their research, preparation of thesis and scientific paper, report of research progress at interim interview, and presentation of research results at domestic/international conference(s). |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-604-79-2 | 2023whole year | Graduate School of Medical Sciences (25670) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Special Research I on Infectious Diseases and AIDS(pecial Research I on Infectious Diseases and AIDS) | UENO Takamasa, GATANAGA Hiroyuki, Yasunaga Junichiro, TACHIKAWA Ai, OKADA Seiji, SATO Yorifumi, OSHIUMI Hiroyuki, MATSUI Hirotaka, Yasunaga Junichirou, SAWA Tomohiro, SUZU Shinya, IKEDA Terumasa, TANAKA Yasuhito |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥50% 3.Global perspective and ability to take initiative action ‥‥50% |

| | |
|---|---|
| Type of Class(授業の形態) | Other |
| Teaching Method(授業の方法) | Research and training activities at advanced research facilities in developed countries or medical facilities in developing countries for 6 weeks or longer |
| Course Goals(授業の目的) | High quality research and fostering of world-class researchers through the research and training activities at advanced research facilities in developed countries or medical facilities in developing countries |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>High quality research and cultivation of students as future world-class researchers through the research and training activities at advanced research facilities in developed countries or medical facilities in developing countries<br>【C level (C水準)】<br>High quality research and cultivation of students as future world-class researchers through the research and training activities at advanced research facilities in developed countries or medical facilities in developing countries |
| Course Outline(授業の概要) | Research and training activities at advanced research facilities in developed countries or medical facilities in developing countries for 6 weeks or longer |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Research and training abroad for 6 weeks or longer | Research and training abroad |

| | |
|---|---|
| Estimated out-of-class study time | This course consists of content that requires 60 hours of study.<br>Since the class is 48 hours long, the equivalent of 12 hours of prior and post-course study is required. |
| Required Textbook(テキスト) | Nothing in particular |
| Reading List(参考文献) | Nothing in particular |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Grades will be assessed based on research/training plans and reports after the research/training abroad |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-605-79-2 | 2023whole year | Graduate School of Medical Sciences (25680) | 1, 2, 3, 4 | 4 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Special Research II on Infectious Diseases and AIDS(Special Research II on Infectious Diseases and AIDS) | UENO Takamasa, GATANAGA Hiroyuki, MATANO Tetsuro, TACHIKAWA Ai, OKADA Seiji, SATO Yorifumi, OSHIUMI Hiroyuki, MATSUI Hirotaka, YASUNAGA Junichirou, SAWA Tomohiro, SUZU Shinya, IKEDA Terumasa, TANAKA Yasuhito |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥50% 3.Global perspective and ability to take initiative action ‥‥50% |

| | |
|---|---|
| Type of Class(授業の形態) | Other |
| Teaching Method(授業の方法) | Research and training activities at advanced research facilities in developed countries or medical facilities in developing countries for 4 months or longer |
| Course Goals(授業の目的) | High quality research and fostering of world-class researchers through the research and training activities at advanced research facilities in developed countries or medical facilities in developing countries |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>High quality research and cultivation of students as future world-class researchers through the research and training activities at advanced research facilities in developed countries or medical facilities in developing countries<br>【C level (C水準)】<br>High quality research and cultivation of students as future world-class researchers through the research and training activities at advanced research facilities in developed countries or medical facilities in developing countries |
| Course Outline(授業の概要) | Research and training activities at advanced research facilities in developed countries or medical facilities in developing countries for 4 months or longer |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Research and training abroad for 4 months or longer | Research and training abroad |

| | |
|---|---|
| Estimated out-of-class study time | This course consists of content that requires 180 hours of study.<br>Since the class is 120 hours long, the equivalent of 60 hours of prior and post-course study is required. |
| Required Textbook(テキスト) | Nothing in particular |
| Reading List(参考文献) | Nothing in particular |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Grades will be assessed based on research/training plans and reports after the research/training abroad |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

# Endocrinology and Metabolism Course

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RDM7-122-82-0 | 2023whole year | Graduate School of Medical Sciences (22250) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Practical Training of Metabolic Medicine() | Oike Yuuichi, Katou Takahiko, YAMAGATA Kazuya, MATSUI Hirotaka, SAWA Tomohiro, KOMOHARA Yoshihiro, TSUJITA Kenichi, MOROISHI Toshiro |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥30% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥30% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Practice |
| Teaching Method(授業の方法) | Each training course will be held in a laboratory in charge. First, the principle of a method or a technique will be lecureted, then practical handling will be trained. Results, which will be discussed, must be surmarized in a report. |
| Course Goals(授業の目的) | Various experimental methods and techniques are applied in the field of Metabolism and Cardiovascular Medicine, which is an interdisciplinary research based on epidemiology, internal medicine, pathology, pharmacology, histology and cell biology. For researchers in the field, it is required to learn such experimental methods and techniques practically. Even for researcher outside the filed, it is important to understand a background of the experimental methods and techniques, since it gives us a multilateral viewpoint and would support to resolve various problems in spesific research fields. Principles and practical procedures for several important experimental methods and techniques were trained in practical training of Metabolism and Cardiovascular Medicine. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Principles and practical procedures for several important experimental methods and techniques were trained in practical training of Metabolism and Cardiovascular Medicine.<br>【C level (C水準)】 |
| Course Outline(授業の概要) | Following methods and techniques are trained:<br>・Introduction of epidemiology: Epidemiological and statistical analysis (Public Health)<br>・Introduction of metabolic analysis: Method of analyzing metabolic disease (Molecular Laboratory Medicine)<br>・Metabolic analysis 1: Analyzing intracellular signal transduction in response to metabolic changes (Cell Signaling and Metabolic Medicine)<br>・Metabolic analysis 2: Measurements of insulin by ELISA (Medical Biochemistry)<br>・Metabolic analysis 3: Whole body metabolism, CT (Molecular Genetics)<br>・Metabolic analysis 4: Cardiovascular disease model (Cardiovascular Medicine)<br>・Histological analysis: Histopathology, Immunohistochemistry (Cell Pathology)<br>・Oxidative stress analysis: Measurements of reactive oxygen species (Microbiology)<br>In this course, sessions in Practical training of Developmental Biology and Regenerative Medicine also could be selected. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Introduction of epidemiology | Epidemiological and statistical analysis (Public Health) |
| 2 | | Introduction of metabolic analysis | Method of analyzing metabolic disease (Molecular Laboratory Medicine) |
| 3 | | Metabolic analysis 1 | Analyzing intracellular signal transduction in response to metabolic changes(Cell Signaling and Metabolic Medicine) |
| 4 | | Metabolic analysis 2 | Measurements of insulin by ELISA (Medical Biochemistry) |
| 5 | | Metabolic analysis 3 | Whole body metabolism, CT (Molecular Genetics) |
| 6 | | Metabolic analysis 4 | Cardiovascular disease model (Cardiovascular Medicine) |
| 7 | | Histological analysis | Histopathology, Immunohistochemistry (Cell Pathology) |
| 8 | | Oxidative stress analysis | Measurement of oxidative stress and inflammatory markers (Microbiology) |

| | |
|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | Textbooks are not specified, and handouts for each practice will be distributed. |
| Reading List(参考文献) | |
| Enrollment Conditions(履修条件) | |
| Assessment Methods and Criteria(評価方法・基準) | Grading will be based on active class participation and discuttion and the final report. In the report, results and comments concerning at least 8 sessions sould be summarized in one or two A4 sheets. |
| Language Used in Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

# Educational Program for extension of healthy life expectancy

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RMD7-164-79-2 | 2023whole year | Graduate School of Medical Sciences (25790) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Special Lecture I on CMHA(G1 Special Lecture I on CMHA) | MOROISHI Toshiro, KATOH Takahiko, MIURA Kyoko, TOMIZAWA Kazuhito, IWAMOTO Kazuya, YAMAGATA Kazuya, SONG Wen-Jie, BABA Hideo, ONO Yusuke, MATSUMURA Takeshi, INOUE Toshihiro, TAKIZAWA Hitoshi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥30% 2.Profound inter-disciplinary knowledge ‥‥40% 3.Global perspective and ability to take initiative action ‥‥25% 4.Social leadership drive ‥‥5% |

| | |
|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | By taking advantage of repeated learning and attendance from remote locations, lectures will be conducted by e-learning. Students will take a video class, and ask questions they may have after the class. Students will check for comprehension by submitting a report related to the lecture, or by answering questions presented at the end of the lecture. |
| Course Goals(授業の目的) | With a rapidly aging global population due to increased life expectancy, it is medically and socially required to bring the healthy life expectancy (=the period during which one can live a healthy life without disturbing daily life) as close as possible to the limit life expectancy. In order to extend healthy life expectancy, we need to elucidate the basic mechanism of aging in humans and develop methods to prevent and treat aging-related diseases (e.g., diabetes, heart failure, cancer, dementia). By taking this class, students are encourage to gain a basic knowledge of aging and aging-related disorders in a wide range of research fields, including the physiology of aging, the pathogenic basis of aging-related diseases, epidemiology, therapeutic strategies, and social medicine. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>The following aims have been excellently achieved.<br>(1) To acquire a basic knowledge of aging and aging-related disorders, including the physiology of aging, the pathogenic basis of aging-related diseases, epidemiology, therapeutic strategies, and social medicine.<br>(2) To discuss the latest academic research on aging and healthy longevity.<br><br>【C level (C水準)】<br>The following aims have been acceptably achieved.<br>(1) To acquire a basic knowledge of aging and aging-related disorders, including the physiology of aging, the pathogenic basis of aging-related diseases, epidemiology, therapeutic strategies, and social medicine.<br>(2) To discuss the latest academic research on aging and healthy longevity. |
| Course Outline(授業の概要) | Students will learn about the physiology of aging as well as aging-related diseases (including pathophysiology, prevention and treatment methods). In addition, students will deepen their understanding of latest academic research on aging and healthy longevity through omnibus-style lectures provided by the faculty members in CMHRA (including all research division: Metabolic and Cardiovascular Research / Cancer and Stem Cell Research / Nervous System, Sensory, and Locomotive Research / Animal Models of Aging Research / Epidemiological Research). |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | 1st　MIURA Kyoko【eE-0】 | The biology of aging |
| 2 | | 2nd　YAMAGATA Kazuya【eE-0】 | Regulation of glucose metabolism by insulin |
| 3 | | 3rd　YAMAGATA Kazuya【eE-0】 | Molecular mechanism of type 2 diabetes |
| 4 | | 4th　YAMAGATA Kazuya【eE-0】 | Monogenic form of diabetes mellitus |
| 5 | | 5th　MATSUMURA Takeshi【eE-0】 | Management of diabetic complications to achieve healthy longevity |
| 6 | | 6th　BABA Hideo【eE-0】 | Diagnosis and treatment for gastroenterological cancer |
| 7 | | 7th　MOROISHI Toshiro【eE-0】 | Cellular signaling pathways in aging and cancer |
| 8 | | 8th　TAKIZAWA Hitoshi【eE-0】 | Inflamm-aging of blood system |
| 9 | | 9th　TOMIZAWA Kazuhito【eE-0】 | RNA modifications and disease onset |
| 10 | | 10th　SONG Wen-Jie【eE-0】 | Learning and memory |
| 11 | | 11th　IWAMOTO Kazuya【eE-0】 | Aging-related epigenetic changes and psychiatric disorders |
| 12 | | 12th　INOUE Toshihiro【eE-0】 | Glaucoma that threatens healthful longevity |
| 13 | | 13th　ONO Yusuke【eE-0】 | Age-related changes in skeletal muscle and sarcopenia |
| 14 | | 14th　KATOH Takahiko【eE-0】 | Concepts of social medicine |
| 15 | | 15th　KATOH Takahiko【eE-0】 | Introduction to epidemiology |

| | |
|---|---|
| Estimated out-of-class study time | This course consists of content that requires 90 hours of study. Since the lesson is 30 hours (2 hours x 15 frames), 60 hours of pre- and post-study (including reports) is required to deepen the understanding of the lesson. |
| Required Textbook(テキスト) | No particular textbook. Materials summarizing the points of the lecture will be distributed. |
| Reading List(参考文献) | Biology of Aging (2nd Edition, by Roger B. McDonald) ISBN 9780815345671<br>The Biology of Senescence: A Translational Approach (by Bernard Swynghedauw) ISBN 9783030151102 |
| Enrollment Conditions(履修 | Have basic knowledge concerning what is taught in this course. |

| | |
|---|---|
| 条件) | Have basic knowledge concerning what is taught in this course. |
| Assessment Methods and Criteria(評価方法・基準) | This class consisted of a series of omnibus lectures by 15 lecturers as listed in the schedule. Evaluation will be done based on active class participation, examination test and/or report for subjects by each lecturer. In order to get credits students have to take more than 2/3 lectures. Grading will be based on the average of top 10 scores among ones obtained by the student. |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RMD7-165-79-2 | 2023whole year | Graduate School of Medical Sciences (25800) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Special Lecture II on CMHA(G2 Special Lecture II on CMHA) | MIURA Kyoko, IWAMOTO Kazuya, YAMAGATA Kazuya, Sou Bunketsu, ARAKI Kimi, KOMOHARA Yoshihiro, KADOMATSU Tsuyoshi, Lu Xi, Morishima Tatuya, SADA Aiko, Chujyo Takeshi, FUJIMAKI Shin, KANAMORI Yohei |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥35% 2.Profound inter-disciplinary knowledge ‥‥35% 3.Global perspective and ability to take initiative action ‥‥20% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Lecture and Seminar |
| Teaching Method(授業の方法) | This class can be taken in one year or spread over multiple years for credit before completing thesis research. All classes are face-to-face. The instructor in charge uploads the paper to Moodle. The student in charge of each class will give a presentation in a journal club style, and everyone participates in Q&A and discussion. The students other than the presenter must submit a report for each class to the instructor in charge. The presenter does not need to submit a report for that class. Grades will be evaluated based on the presentation and reports.<br><br>Please note that depending on the number of participants, there may be changes to the course content and schedule. We will contact you via Moodle. Please make sure you have your email set up so that you can receive emails from Moodle. |
| Course Goals(授業の目的) | Practical learning of the latest research on the biology of aging, the mechanisms of several age-related diseases, public health, epidemiology, research tools, how to conduct research, and training of presentation etc. in a journal club style. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Good understanding of the content of the paper, giving an excellent PowerPoint presentation, question and answer session, and report.<br>【C level (C水準)】<br>Understanding the contents of the paper, giving a PowerPoint presentation, participating in the question and answer session, and submitting a report. |
| Course Outline(授業の概要) | In this course, students will learn the latest researches on the biology of aging, the mechanisms of several age-related diseases, public health, epidemiology, research tools, how to conduct research, and training of presentation etc. in a journal club style. Faculty members of the Center for Metabolic Regulation of Healthy Aging will choose the latest paper related to their research topics, and students will study the contents through making presentations, discussions, and reports. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Tutorial 1 (journal club) | Department of Aging and Longevity Research MIURA Kyoko<br>Introduction (How to make a presentation) |
| 2 | | Tutorial 2 (journal club) | Department of Cell Pathology KOMOHARA Yoshihiro<br>Macrophage and cancer<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing. |
| 3 | | Tutorial 3 (journal club) | Department of Medical Biochemistry YAMAGATA Kazuya<br><br>Regulation of glucose metabolism and its disruption<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing. |
| 4 | | Tutorial 4 (journal club) | Department of Molecular Genetics KADOMATSU Tsuyoshi<br>Altered energy metabolism and age-related diseases<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing. |
| 5 | | Tutorial 5 (journal club) | Department of Cell Signaling and Metabolic Medicine KANAMORI Yohei<br><br>Cellular metabolism<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing. |
| 6 | | Tutorial 6 (journal club) | Laboratory of Stem Cell Stress MORISHIMA Tatsuya<br>Hematopoiesis under inflammatory stress<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing. |
| 7 | | Tutorial 7 (journal club) | Department of Molecular Physiology CHUJO Takeshi<br>RNA modification in health, disease, and COVID19 mRNA vaccine<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing. |

| | | | |
|---|---|---|---|
| 8 | | Tutorial 8 (journal club) | Department of Sensory and Cognitive Physiology SOU Bunketsu<br>Hearing and age-related hearing loss<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing. |
| 9 | | Tutorial 9 (journal club) | Department of Molecular Brain Science IWAMOTO Kazuya<br>Aging and DNA methylation<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing. |
| 10 | | Tutorial 10 (journal club) | Department of Muscle Development and Regeneration FUJIMAKI Shin<br>Towards overcoming sarcopenia<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing. |
| 11 | | Tutorial 11 (journal club) | Division of Developmental Genetics ARAKI Kimi<br>Reserch using genetically modified mice<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing. |
| 12 | | Tutorial 12 (journal club) | Department of Public Health Lu Xi<br>Public health and epidemiology<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing. |
| 13 | | Tutorial 13 (journal club) | Laboratory of Skin Regeneration and Aging SADA Aiko<br>Stem cell dynamics in skin regeneration and aging<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing. |
| 14 | | Tutorial 14 (journal club) | Department of Aging and Longevity Research MIURA Kyoko<br>The longest-lived rodent, the naked mole-rat<br><br>Students will study the contents of the assigned paper through presentations, discussions, and report writing.<br><br>This class will be counted as two classes. Please note that the end time will be late. |
| 15 | | ----- | ------ |

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|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | None |
| Reading List(参考文献) | The instructor for each session will upload the paper on Moodle. |
| Enrollment Conditions(履修条件) | Students should have basic knowledge related to this class. |
| Assessment Methods and Criteria(評価方法・基準) | Students are required to attend more than 10 classes (Journal club) in a single year or in multiple years before completion of Thesis research. Also, students are required to make at least one PowerPoint presentation, and for all other classes, are required to submit essays/reports via Moodle within one week on the paper and presentation of each class. (more than 9 times). You do not need to submit a report for the class in which you present. Attendance will be counted by submitting a report. No final exam will be given.<br><br>Note: Classes that are listed as "being counted as two classes" will be counted as having been attended twice in one attendance/ report, although the end time may be later. |
| Language Used in Instruction(使用言語) | English |
| Textbook/Material Language(教科書・資料の言語) | English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| | 2023whole year | Graduate School of Medical Sciences (26051) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Special Lecture on Bioethics (For students admitted in 2023 and later)(Doctoral Course A1・Master's Course A5) | KADOOKA Yasuhiro |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥50% 2.Profound inter-disciplinary knowledge ‥‥50% |

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|---|---|
| Type of Class(授業の形態) | Lecture |
| Teaching Method(授業の方法) | active learning (discussion and presentation) and online learning |
| Course Goals(授業の目的) | This course aims to support students to have relevant knowledge and practical skills for biomedical ethics in order for graduate research and future career. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>to deal with ethical issues in actual settings of biomedical research and medical practice by making interdisciplinary discussion and moral reasoning<br>【C level (C水準)】<br>to have basic knowledge for ethical conducts in biomedical research and medical practice |
| Course Outline(授業の概要) | eAPRIN online program will be adopted to learn basic elements of research ethics.<br>Active leaning methods will be adopted to gain skills for ethical conduct of biomedical research and medical decision-making. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Research integrity 1 | eAPRIN online program |
| 2 | | Research integrity 2 | eAPRIN online program |
| 3 | | Research integrity 3 | eAPRIN online program |
| 4 | | Research integrity 4 | eAPRIN online program |
| 5 | | Research ethics 1 | eAPRIN online program |
| 6 | | Research ethics 2 | eAPRIN online program |
| 7 | | Research ethics 3 | eAPRIN online program |
| 8 | | Research ethics 4 | eAPRIN online program |
| 9 | 07/31 | Step-up lecture on research ethics 1 | Active learning will be held. (The instructor will set a related topic. Students will audit a small lecture, discuss and then make presentation or comment.) |
| 10 | 08/07 | Step-up lecture on research ethics 2 | Active learning will be held. (The instructor will set a related topic. Students will audit a small lecture, discuss and then make presentation or comment.) |
| 11 | 08/21 | Step-up lecture on research ethics 3 | Active learning will be held. (The instructor will set a related topic. Students will audit a small lecture, discuss and then make presentation or comment.) |
| 12 | 08/28 | Medical ethics 1 | Active learning will be held. (The instructor will set a related topic. Students will audit a small lecture, discuss and then make presentation or comment.) |
| 13 | 09/04 | Medical ethics 2 | Active learning will be held. (The instructor will set a related topic. Students will audit a small lecture, discuss and then make presentation or comment.) |
| 14 | 09/11 | Medical ethics 3 | Active learning will be held. (The instructor will set a related topic. Students will audit a small lecture, discuss and then make presentation or comment.) |
| 15 | 09/25 | Medical ethics 4 | Active learning will be held. (The instructor will set a related topic. Students will audit a small lecture, discuss and then make presentation or comment.) |

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| Estimated out-of-class study time | 60 hours of self-learning (out-of-class study) is recommended in addition to 30-hours lecture (2hrs X 15 times). |
| Required Textbook(テキスト) | NA |
| Reading List(参考文献) | Principles of Biomedical Ethics. Beauchamp TL and Childress JF. OXFORD University Press.<br>Bioethics Briefings. The Hastings Center. https://www.thehastingscenter.org/publications-resources/hastings-center-bioethics-briefings/<br>Responsible Conduct of Research. Shamoo AE and Resnik DB. OXFORD University Press.<br>The Oxford Textbook of Clinical Research Ethics. Emanuel EJ, Crady C et al eds. OXFORD University Press.<br>Medical Ethics Today. British Medical Association Ethics Department. Wiley-Blackwell.<br>Resolving Ethical Dilemmas A Guide for Clinicians. Lo B. LWW. |
| Enrollment Conditions(履修条件) | Participating students are recommended to have basic knowledge life-sciences. |
| Assessment Methods and Criteria(評価方法・基準) | Students are evaluated for their grades and credits based on the course hours completed, understanding of each subject and abilities of discussion and ethical reasoning. |
| Language Used in | Japanese and English |

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|---|---|
| Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RMD7-166-99-2 | 2023whole year | Graduate School of Medical Sciences (25810) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Special Practice(Special Practice) | MOROISHI Toshiro, YAMAGATA Kazuya, BABA Hideo, Oike Yuuichi, TSUJITA Kenichi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥40% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥20% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Other |
| Teaching Method(授業の方法) | Students can take seminars presented by invited speakers (including "D1 Medical and Life Seminar" and "D2 Learning from Experienced Doctor"). |
| Course Goals(授業の目的) | Students are encouraged to gain a basic knowledge about aging, aging-related diseases, and healthy life expectancy. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students excellently acquired a knowledge about aging/aging-related diseases/ therapeutic strategies for healthy life expectancy, and can discuss about the problems.<br><br>【C level (C水準)】<br>Students acceptably acquired a knowledge about aging/aging-related diseases/ therapeutic strategies for healthy life expectancy, and can discuss about the problems. |
| Course Outline(授業の概要) | Students can learn about recent advances of the research fields by taking seminars presented by invited speakers (including "D1 Medical and Life Seminar" and "D2 Learning from Experienced Doctor"). |

| Details for Individual Classes(各回の授業内容) | | | |
|---|---|---|---|
| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
| 1 | | Research seminar | Research seminar by invited speakers |

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| Estimated out-of-class study time | This course consists of content that requires 90 hours of study. Since the lesson is 30 hours (2 hours x 15 frames), 60 hours of pre- and post-study (including reports) is required to deepen the understanding of the lesson. |
| Required Textbook(テキスト) | No particular textbook. |
| Reading List(参考文献) | Biology of Aging (2nd Edition, by Roger B. McDonald) ISBN 9780815345671<br>The Biology of Senescence: A Translational Approach (by Bernard Swynghedauw) ISBN 9783030151102 |
| Enrollment Conditions(履修条件) | Have basic knowledge concerning what is taught in this course. |
| Assessment Methods and Criteria(評価方法・基準) | Students are required to attend seminars (more than 12 times) presented by invited speakers (including "D1 Medical and Life Seminar" and "D2 Learning from Experienced Doctor") for credit before completion of their Thesis research. Students are also required to write at least 4 essays about the seminars. Students have to submit the essay to the professors in charge within one month by e-mail. |
| Language Used in Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RMD7-167-79-2 | 2023whole year | Graduate School of Medical Sciences (25820) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Practice I on CMHA(Practice I on CMHA) | MOROISHI Toshiro, YAMAGATA Kazuya, BABA Hideo, Oike Yuuichi, TSUJITA Kenichi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥40% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥20% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Other |
| Teaching Method(授業の方法) | Students will present their research results at a domestic conferences/meeting. |
| Course Goals(授業の目的) | Students can present and discuss their research results (e.g. aging, aging-related diseases, and healthy life expectancy) as a first author at a domestic conferences/meeting. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students can excellently present and discuss their research results (e.g. about aging, aging-related diseases, and healthy life expectancy) at a domestic conferences/meeting.<br>【C level (C水準)】<br>Students can acceptably present and discuss their research results (e.g. about aging, aging-related diseases, and healthy life expectancy) at a domestic conferences/meeting. |
| Course Outline(授業の概要) | Students can present and discuss their research results (e.g. aging, aging-related diseases, and healthy life expectancy) as a first author at a domestic conferences/meeting. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Presentation at domestic conferences/meeting. | Presentation at domestic conferences/meeting. |

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|---|---|
| Estimated out-of-class study time | This course consists of content that requires 90 hours of study. Since the lesson is 30 hours (2 hours x 15 frames), 60 hours of pre- and post-study (including reports) is required to deepen the understanding of the lesson. |
| Required Textbook(テキスト) | No particular textbook. |
| Reading List(参考文献) | No particular textbook. |
| Enrollment Conditions(履修条件) | Have basic knowledge concerning what is taught in this course. |
| Assessment Methods and Criteria(評価方法・基準) | (1) Presentation of research results at domestic conferences/meeting. (2) The record of presentation (e.g. abstract) is necessary. |
| Language Used in Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RMD7-168-79-2 | 2023whole year | Graduate School of Medical Sciences (25830) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Practice II on CMHA(Practice II on CMHA) | MOROISHI Toshiro, YAMAGATA Kazuya, BABA Hideo, Oike Yuuichi, TSUJITA Kenichi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥40% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥20% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Other |
| Teaching Method(授業の方法) | Students will present their research results at international conferences/meeting. |
| Course Goals(授業の目的) | Students can present and discuss their research results (e.g. aging, age-related diseases, and healthy life expectancy) as a first author at international conferences/meeting. |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students can excellently present and discuss their research results (e.g. aging, aging-related diseases, and healthy life expectancy) at international conferences/meeting.<br>【C level (C水準)】<br>Students can acceptably present and discuss their research results (e.g. aging, aging-related diseases, and healthy life expectancy) at international conferences/meeting. |
| Course Outline(授業の概要) | Students can present and discuss their research results (e.g. aging, age-related diseases, and healthy life expectancy) as a first author at international conferences/meeting. |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Presentation at international conferences/meeting | Presentation at international conferences/meeting |

| | |
|---|---|
| Estimated out-of-class study time | This course consists of content that requires 90 hours of study. Since the lesson is 30 hours (2 hours x 15 frames), 60 hours of pre- and post-study (including reports) is required to deepen the understanding of the lesson. |
| Required Textbook(テキスト) | No particular textbook. |
| Reading List(参考文献) | No particular textbook. |
| Enrollment Conditions(履修条件) | Have basic knowledge concerning what is taught in this course. |
| Assessment Methods and Criteria(評価方法・基準) | (1) Presentation of research results at international conferences/meeting. (2) The record of presentation (e.g. abstract) is necessary. |
| Language Used in Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |

| Course Coding(科目ナンバー) | Year/Semester/Term(年度・学期) | Faculty Offering Course(時間割所属・時間割コード) | Eligible Student Year(開講年次) | Credits(単位数) | Weekday and Period(曜日・時限) |
|---|---|---|---|---|---|
| RMD7-169-79-2 | 2023whole year | Graduate School of Medical Sciences (25840) | 1, 2, 3, 4 | 2 | others |

| Course Title(Theme)(科目名(講義題目)) | Instructor(s)(担当教員) |
|---|---|
| Practice III on CMHA(-) | MIURA Kyoko, YAMAGATA Kazuya, BABA Hideo, Oike Yuuichi, TSUJITA Kenichi |

| Goals with their ratio(学修成果とその割合) |
|---|
| 1.Advanced expert knowledge, skill and research capability ‥‥40% 2.Profound inter-disciplinary knowledge ‥‥30% 3.Global perspective and ability to take initiative action ‥‥20% 4.Social leadership drive ‥‥10% |

| | |
|---|---|
| Type of Class(授業の形態) | Other |
| Teaching Method(授業の方法) | Students will present their research results at CMHA cross-cutting conference (e.g. CMHA borderless conference). |
| Course Goals(授業の目的) | Students will present and discuss their research results at CMHA cross-cutting conference (e.g. CMHA borderless conference). |
| Course Learning goals(学修目標) | 【A level (A水準)】<br>Students can excellently present and discuss their research results (e.g. aging, aging-related diseases, and healthy life expectancy) at CMHA cross-cutting conferences (e.g. CMHA borderless conference).<br>【C level (C水準)】<br>Students can acceptably present and discuss their research results (e.g. aging, aging-related diseases, and healthy life expectancy) at CMHA cross-cutting conferences (e.g. CMHA borderless conference). |
| Course Outline(授業の概要) | Students can present and discuss their research results (e.g. aging, aging-related diseases, and healthy life expectancy) at CMHA cross-cutting conferences (e.g. CMHA borderless conference). |

Details for Individual Classes(各回の授業内容)

| No.(回) | Date(月日) | Class Theme(授業テーマ) | Brief Outline of Class(内容概略) |
|---|---|---|---|
| 1 | | Presentation at CMHA cross-cutting conference | Presentation at CMHA cross-cutting conference |

| | |
|---|---|
| Estimated out-of-class study time | |
| Required Textbook(テキスト) | None |
| Reading List(参考文献) | None |
| Enrollment Conditions(履修条件) | Having basic knowledge about this class. |
| Assessment Methods and Criteria(評価方法・基準) | Presentation of research results at CMHA cross-cutting conference at least one time. |
| Language Used in Instruction(使用言語) | Japanese and English |
| Textbook/Material Language(教科書・資料の言語) | Combination of Japanese and English |
| Course Based on Practical Work Experience(実務経験を活かした授業) | Not applicable |