

**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 cilnical study
- D1 Medical and Life science Seminar
- D2 Learning from Experienced Doctors Seminar
- D3 Medicine and Life Science Training
- D5 Translational Research Seminar

## **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 extension of healthy life expectancy**

- 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

| Course Coding(科目番号)  | 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  | 2021 whole 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(A1 Medical Informatics and Medical Ethics)          |  |   | Kadooka Yasuhiro, USUKU Koichiro, Kasaoka Shunji  |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |   |   |              |                           |
| 1.高度な専門的知識・技能及び研究力……25% 2.学際的領域を理解できる深奥な教養力……25% 3.グローバルな視野と行動力……25% 4.地域社会を牽引するリーダー力……25% |  |   |   |              |                           |
| 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. 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.(回数)  | Date(月日)   | Class Theme(授業テーマ)  | Brief Outline of Class(内容概略)  |              |                           |
| 1  | 05/31  | 6th period 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  | 06/07  | 6th period eAPRIN [eEJ-0]   | Data Handling_RCR / Rules for Collaborative Research_RCR /<br>Conflicts of Interest_RCR   |              |                           |
| 3  | 06/14  | 4th period eAPRIN [eEJ-0]   | Authorship_RCR / Plagiarism(Biomedical)_RCR /<br>Communicating Information to the Public_RCR  |              |                           |
| 4  | 06/21  | 4th period eAPRIN [eEJ-0]   | Peer Review(Biomedical)_RCR / Mentoring_RCR /<br>Managing Public Research Funds_RCR   |              |                           |
| 5  | 06/28  | 4th period eAPRIN [eEJ-0]   | The History and Principles of Bioethics, and the<br>Development of Its Rules_HSR / Review by an<br>Institutional Review Board (IRB)_HSR / Handling<br>Personal Information in Research_HSR  |              |                           |
| 6  | 07/05  | 4th period eAPRIN [eEJ-0]   | Genomic and Genetic Analysis Studies in Human<br>Populations_HSR / Group Harm Arising from<br>Research_HSR /<br>Informed Consent in Research_HSR  |              |                           |
| 7  | 07/12  | 4th period eAPRIN [eEJ-0]   | Research Subjects Who Merit Special<br>Considerations_HSR /<br>Records-Based Research_HSR / Social and Behavioral<br>Research for Biomedical Researchers_HSR  |              |                           |
| 8  | 07/19  | 4th period eAPRIN [eEJ-0]   | International Studies_HSR / The Ethics of Pluripotent<br>Stem Cell Research I_HSR / The Ethics of Pluripotent<br>Stem Cell Research II_HSR  |              |                           |
| 9  | 07/26  | 4th period eAPRIN [eEJ-0]   | Digest: Human Subjects Research_HSR / Care and Use<br>of Laboratory Animals Module 1 Basic Knowledge of<br>Animal Experiments_ACU / Care and Use of Laboratory<br>Animals Module 2 What You Should Consider When<br>Conducting Animal Experiments_ACU |              |                           |
| 10   | 08/02  | 4th period Koichiro Usuku [eJ-0]                                    | Health care system in Japan and in the world  |              |                           |
| 11   | 08/23  | 4th period Shunji Koichiro Usuku [eEJ-0]                            | Future prospects of Electronic medical records, Clinical<br>research and data ware hous   |              |                           |
| 12   | 08/30  | 4th period Shunji Kasaoka [eJ-0]                                    | Emergency Medical Service System, Post-Cardiac Arrest<br>Syndrome   |              |                           |
| 13   | 09/06  | 4th period Shunji Kasaoka [eE-0] [eJ-0]                             | Disaster Medicine, Triage   |              |                           |
| 14   | 09/13  | 4th period Yasuhiro Kadooka   | Step up Lecture for Research Ethics (1)   |              |                           |
| 15   | 09/27  | 4th period Yasuhiro Kadooka   | Step up Lecture for Research Ethics (2)   |              |                           |
| Required Textbook(テキスト)  | Textbooks are not specified, and handouts will be distributed by the moodle system.  |   |   |              |                           |

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| 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  | 2021 whole 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(B1)   |   |  | Mitsuyama Shokei, YAMAGATA Kazuya, YAMANAKA Kunitoshi, Baba Masaya |   |                           |
| Goals with their ratio(学修成果とその割合)  |   |  |  |   |                           |
| 1.高度な専門的知識・技能及び研究力……30% 2.学際的領域を理解できる深奥な教養力……30% 3.グローバルな視野と行動力……30% 4.地域社会を牽引するリーダー力……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 role of growth factors and receptors, and cell signaling, in cancer, and molecular targeted therapy in cancer<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 the role of growth factors and receptors, and cell signaling, in cancer, and molecular targeted therapy in cancer (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.(回数)  | Date(月日)  | Class Theme(授業テーマ)                         |  | Brief Outline of Class(内容概略)                    |                           |
| 1  | 06/01   | 5th period                                 | Mitsuyama Shokei [eEJ-0]   | Pathophysiology of cardiovascular diseases (1)  |                           |
| 2  | 06/08   | 5th period                                 | Mitsuyama Shokei [eEJ-0]   | Pathophysiology of cardiovascular diseases (2)  |                           |
| 3  | 06/15   | 4th period                                 | Mitsuyama Shokei (Koibuchi Nobutaka) [eJ-0]                        | Hypertension and hyperglycemia during pregnancy |                           |
| 4  | 06/22   | 4th period                                 | YAMAGATA Kazuya [eEJ-0]  | Pathophysiology of glucose/lipid metabolism (1) |                           |
| 5  | 06/29   | 4th period                                 | YAMAGATA Kazuya [eEJ-0]  | Pathophysiology of glucose/lipid metabolism (2) |                           |
| 6  | 07/06   | 4th period                                 | YAMAGATA Kazuya [eEJ-0]  | Pathophysiology of glucose/lipid metabolism (3) |                           |
| 7  | 07/13   | 4th period                                 | YAMANAKA Kunitoshi [eJ-L]  | ATPases related to life of proteins             |                           |
| 8  | 07/20   | 4th period                                 | YAMANAKA Kunitoshi [eEJ-0]   | Various functions of AAA proteins               |                           |
| 9  | 07/27   | 4th period                                 | YAMANAKA Kunitoshi [eJ-L]  | Human diseases caused by AAA proteins           |                           |
| 10   | 08/03   | 4th period                                 | Mitsuyama Shokei (YAMAGUCHI Tomoya) [eJ-0]                         | Growth factors and receptors in cancer          |                           |
| 11   | 08/17   | 4th period                                 | Mitsuyama Shokei (YAMAGUCHI Tomoya) [eJ-0]                         | Cell signaling in cancer                        |                           |
| 12   | 08/24   | 4th period                                 | Mitsuyama Shokei (YAMAGUCHI Tomoya) [eJ-0]                         | Molecular targeted therapy in cancer            |                           |
| 13   | 08/31   | 4th period                                 | BABA Masaya [eJ-0]   | Hypoxia signaling pathway and disease           |                           |
| 14   | 09/07   | 4th period                                 | BABA Masaya [eJ-0]   | mTOR signaling pathway and disease              |                           |
| 15   | 09/14   | 4th period                                 | BABA Masaya [eJ-0]   | metabolite signaling and disease                |                           |
| 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., AACCC Press, 2000   |  |  |   |                           |
| Enrollment Conditions(履修条件)  |   |  |  |   |                           |
| Assessment Methods and   | The students' understanding will be evaluated comprehensively based on the quality of report. Students must   |  |  |   |                           |

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| Criteria(評価方法・基準)                                      | select one area from all attended courses and submit its report to the Student Affairs Section. |
| 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) |
|--|---|---|--|--------------|---------------------------|
| RDM7-002-79-2  | 2021 whole 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, Nakanishi Hiroyuki, Ono Yusuke, Tateishi Satoshi, Nakao Mitsuyoshi, Hino Shinjiro |              |                           |
| Goals with their ratio(学修成果とその割合)                                      |   |   |  |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・75% 2.学際的領域を理解できる深奥な教養力・・・20% 3.グローバルな視野と行動力・・・5% |   |   |  |              |                           |
| 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)  | <p>[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.</p> <p>[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.</p> |   |  |              |                           |
| 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.(回数)  | Date(月日)  | Class Theme(授業テーマ)                          | Brief Outline of Class(内容概略)   |              |                           |
| 1  | 06/03   | 5th period, Kazuhito Tomizawa [eE-0, eJ-0]  | Regulation in physiology and pathophysiology   |              |                           |
| 2  | 06/10   | 5th period, Kazuhito Tomizawa [eE-0, eJ-0]  | Regulation by protein phosphorylation  |              |                           |
| 3  | 06/17   | 4th period, Shinjiro Hino [eE-0, eJ-0]      | Cross talk between metabolism and epigenome  |              |                           |
| 4  | 06/24   | 4th period, Yusuke Ono [eE-0, eJ-0]         | Stem cells and tissue regeneration/adaptation I  |              |                           |
| 5  | 07/01   | 4th period, Yusuke Ono [eE-0, eJ-0]         | Stem cells and tissue regeneration/adaptation II   |              |                           |
| 6  | 07/08   | 4th period, Hiroyuki Nakanishi [eE-0, eJ-0] | Regulatory mechanism of cytoskeletons I  |              |                           |
| 7  | 07/15   | 4th period, Hiroyuki Nakanishi [eJ-0]       | Regulatory mechanism of cytoskeletons II   |              |                           |
| 8  | 07/29   | 4th period, Hiroyuki Nakanishi [eE-0, eJ-0] | Cooperation of cytoskeletons and membranes   |              |                           |
| 9  | 08/05   | 4th period, Mitsuyoshi Nakao [eJ-O, eE-O]   | Medical epigenetics I (General remarks)  |              |                           |
| 10   | 08/19   | 4th period, Mitsuyoshi Nakao [eJ-O, eE-O]   | Medical epigenetics II   |              |                           |
| 11   | 08/26   | 4th period, Kazuya Iwamoto [eEJ-0]          | Neuroepigenetics I   |              |                           |
| 12   | 09/02   | 4th period, Kazuya Iwamoto [eEJ-0]          | Neuroepigenetics II  |              |                           |
| 13   | 09/09   | 4th period, Satoshi Tateishi [eEJ-0]        | Cell growth and cell cycle   |              |                           |
| 14   | 09/16   | 4th period, Satoshi Tateishi [eEJ-0]        | About Mitosis and Meiosis  |              |                           |
| 15   | 09/30   | 4th period, Satoshi Tateishi [eEJ-0]        | DNA repair and recombination   |              |                           |
| Required Textbook(テキスト)  | Not specified.  |   |  |              |                           |
| Reading List(参考文献)   | <p>「Pathophysiology of Disease: An Introduction to Clinical Medicine, 6th Edition」 edited by Stephan J. McPhee and William F. Ganong, The McGraw-Hill Companies (2009)</p> <p>「Developmental Biology, 10th Edition」 edited by Scott F. Gilbert, Sinauer Associates Inc. (2013)</p> <p>「Essential Cell Biology, 4th edition」 edited by Bruce Alberts et al. Garland Science, (2013)</p> <p>「EPIGENETICS」 edited by David Allis et al. Cold Spring Harbor Laboratory Press (2007)</p>                                       |   |  |              |                           |
| 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)   | 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  | 2021 whole 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, Awai Hirotake, Takizawa Hitoshi |              |                           |
| Goals with their ratio(学修成果とその割合)  |   |  |   |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・35% 2.学際的領域を理解できる深奥な教養力・・・35% 3.グローバルな視野と行動力・・・20% 4.地域社会を牽引するリーダー力・・・10% |   |  |   |              |                           |
| Type of Class(授業の形態)   | Lecture   |  |   |              |                           |
| Teaching Method(授業の方法)   | Omnibus lectures. 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)  | <p>[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.</p> <p>[C level (C水準)]<br/>Understand the basics of hematopoietic and immune systems, their development, function, disruption, and related diseases.</p>   |  |   |              |                           |
| Course Outline(授業の概要)  | <p>The aims of this lecture series are to understand the followings:</p> <p>(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</p>   |  |   |              |                           |
| 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  | 06/04   | 5th period Minetaro Ogawa [eJ-L]           | Ontogeny of hematopoietic system-1  |              |                           |
| 2  | 06/11   | 5th period Minetaro Ogawa [eJ-L]           | Ontogeny of hematopoietic system-2  |              |                           |
| 3  | 06/18   | 4th period Saori Koga [eJ-L]               | Ontogeny of hematopoietic system-3  |              |                           |
| 4  | 06/25   | 4th period Seiji Okada [eJ-0,eE-0]         | Differentiation of immune cells   |              |                           |
| 5  | 07/02   | 4th period Seiji Okada [eJ-0,eE-0]         | Application of Humanized mice   |              |                           |
| 6  | 07/09   | 4th period Goro Sashida [eEJ-0]            | Molecular mechanism of myeloid malignancies   |              |                           |
| 7  | 07/16   | 4th period Shinya Suzu [eEJ-0]             | Signal on Hematopoiesis   |              |                           |
| 8  | 07/30   | 4th period Hitoshi Takizawa [eE-L]         | Role of inflammation on hematopoiesis   |              |                           |
| 9  | 08/06   | 4th period Yorifumi Sato [eEJ-0]           | T-cell and retroviral infection   |              |                           |
| 10   | 08/20   | 4th period Hiroto Ohguchi [eEJ-0]          | Molecular pathogenesis of plasma cell neoplasm  |              |                           |
| 11   | 08/27   | 4th period Hiroyuki Oshiumi [eJ-L]         | Role of innate immune cells during viral infection  |              |                           |
| 12   | 09/03   | 4th period Hirotake Tsukamoto [eEJ-0]      | T cell development and function   |              |                           |
| 13   | 09/10   | 4th period Hiroyuki Oshiumi [eJ-L]         | Development and function of innate lymphoid cells   |              |                           |
| 14   | 09/17   | 4th period Hirotake Tsukamoto [eEJ-0]      | Antigen presentation for T cell   |              |                           |
| 15   | 09/24   | 4th period Atsushi Irie [eJ-L]             | B cell development and function   |              |                           |
| Required Textbook(テキスト)  | Textbooks are not specified, and handouts will be distributed.  |  |   |              |                           |
| Reading List(参考文献)   | <ul style="list-style-type: none"> <li>・ "The Immune System" by Peter Parham. Garland Publishing Inc. New York and London, 2007</li> <li>・ "Janeway's Immunobiology Seventh Edition" by Kenneth Murphy, Paul Travers, Mark Walport. Garland Science, Taylor &amp; Francis Group LLC. New York and Abingdon, 2008.</li> <li>・ The Immune System, 4th Edition [Peter Parham] Garland Science</li> <li>・ WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues. WHO, 2017.</li> <li>・ The Science of Stem Cells. Jonathan M. W. Slack. Wiley Blackwell, 2018</li> <li>・ Williams Hematology, 9th ed. MCGRAW-HILL EDUCATION. 2016</li> </ul> |  |   |              |                           |
| 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   |  |   |              |                           |

|  |                |
|--|----------------|
| 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  | 2021 whole 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, Kubota Ryuji, Okada Seiji, Oshiumi Hiroyuki, Matsui Hirotaka, Motozono Chihiro, Matsuoka Masao, Sawa Tomohiro, Maeda Yousuke, Suzu Shinya, Nakata Hirotomo, Ikeda Terumasa, Tanaka Yasuhito, Ikeda Masanori |              |                           |
| Goals with their ratio(学修成果とその割合)  |   |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力……30% 2.学際的領域を理解できる深奥な教養力……30% 3.グローバルな視野と行動力……20% 4.地域社会を牽引するリーダー力……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)  | <p>【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.</p> <p>【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</p> |  |  |              |                           |
| 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.(回数)  | Date(月日)  | Class Theme(授業テーマ)                         | Brief Outline of Class(内容概略)   |              |                           |
| 1  | 05/31   | Terumasa Ikeda [eE-O]<br>16:45~18:15       | Retrovirus life cycle  |              |                           |
| 2  | 06/07   | Tomohiro Sawa [eE-O]<br>16:45~18:15        | Bacterial infection and pathogenesis   |              |                           |
| 3  | 06/14   | Hiroyuki Oshiumi [eE-O]<br>16:45~18:15     | Innate immune responses to pathogens   |              |                           |
| 4  | 06/21   | Chihiro Motozono [eE-O]<br>16:45~18:15     | Cellular immune responses to pathogens   |              |                           |
| 5  | 06/28   | Takeo Kuwata [eE-O]<br>16:45~18:15         | Humoral immune responses to pathogens  |              |                           |
| 6  | 07/05   | Yosuke Maeda [eE-O]<br>16:45~18:15         | Pathogenesis of Mycobacterium tuberculosis and HIV confection  |              |                           |
| 7  | 07/12   | Masao Matsuoka [eE-O]<br>16:45~18:15       | Emerging/re-emerging infectious diseases   |              |                           |
| 8  | 07/19   | Shinya Suzu [eE-O]<br>16:45~18:15          | Retroviruses-host interaction  |              |                           |
| 9  | 07/26   | Yorifumi Sato [eE-O]<br>16:45~18:15        | Retroviral infections and latency  |              |                           |
| 10   | 08/02   | Masanori Ikeda [eE-O]<br>16:45~18:15       | Molecular pathogenesis of hepatitis viruses  |              |                           |
| 11   | 08/23   | Yasuhito Tanaka [eE-O]<br>16:45~18:15      | Hepatitis viruses and Liver cancer   |              |                           |
| 12   | 08/30   | Ryuji Kubota [eE-O]<br>16:45~18:15         | Virus-induced neurological diseases  |              |                           |
| 13   | 09/06   | Seiji Okada [eE-O]<br>16:45~18:15          | Animal model research in infectious diseases   |              |                           |
| 14   | 09/13   | Hirotaka Matsui [eE-O]<br>16:45~18:15      | Roles of laboratory medicine for infectious diseases   |              |                           |

|  |  |  |                                    |
|--|--|--|------------------------------------|
| 15   | 09/27  | Hiroto mo Nakata [eE-O]<br>16:45~18:15 | Nosocomial/opportunistic infection |
| Required Textbook(テキスト)                                | Textbooks are not specified, and handouts will be distributed.   |  |                                    |
| Reading List(参考文献)                                     | <p>“Atlas of AIDS” edited by Gerald L. Mandell and Donna Mildvan. Current Medicine, Inc. Philadelphia, 2001.</p> <p>“Infectious Diseases and Medical Microbiology” 2nd Edition, Abraham I. Braude et al., W.B. Saunders Company</p>  |  |                                    |
| 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  | 2021 whole 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(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.高度な専門的知識・技能及び研究力・・・80% 2.学際的領域を理解できる深奥な教養力・・・19% 3.グローバルな視野と行動力・・・1% |   |  |  |              |                           |
| 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', we will try to show you how mental activity appears from 'gene expression', neuron electrical activity, information convergence and divergence in the neuronal circuit. We will inspect hypotheses proposed on the mechanisms to produce brain function. Finally we will speculate the intrinsic brain mechanisms by using mental disorders as clues. |  |  |              |                           |
| 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 show and discuss on the points: molecular mechanisms of induction of neural plate and regionalization. Molecular mechanisms of differentiation and process of morphogenesis, histogenesis, circuit formation, and synaptogenesis will be shown into detail. 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  | 06/01   | 6th period SHIMAMURA [eE-0,eJ-0]           | Neural induction   |              |                           |
| 2  | 06/08   | 6th period SHIMAMURA [eE-0,eJ-0]           | Regionalization of embryonic brain   |              |                           |
| 3  | 06/15   | 5th period SHIMAMURA [eE-0,eJ-0]           | Regionally distinct histogenesis in brain  |              |                           |
| 4  | 06/22   | 5th period ESUMI [eEJ-0]                   | Neuronal diversity and network formation   |              |                           |
| 5  | 06/29   | 5th period ESUMI [eEJ-0]                   | Neuronal network in the neocortex  |              |                           |
| 6  | 07/06   | 5th period SONG [eE-0,eJ-0]                | Action potential   |              |                           |
| 7  | 07/13   | 5th period SONG [eE-0,eJ-0]                | Synapse and synaptic transmission  |              |                           |
| 8  | 07/20   | 5th period SONG [eE-0,eJ-0]                | Neurotransmitter   |              |                           |
| 9  | 07/27   | 5th period SONG [eE-0,eJ-0]                | Synaptic plasticity  |              |                           |
| 10   | 08/03   | 5th period FUJISE [eE-0,eJ-0]              | Neurotransmitter and mental symptom  |              |                           |
| 11   | 08/17   | 5th period IWAMOTO [eE-0]                  | Genetics and epigenetics of psychiatric disorders  |              |                           |
| 12   | 08/24   | 5th period BUNDO [eE-0]                    | Somatic mutations and psychiatric disorders  |              |                           |
| 13   | 08/31   | 5th period FUKUHARA [eEJ-0]                | Neural basis of dementia   |              |                           |
| 14   | 09/07   | 5th period TAKEBAYASHI [eJ-0]              | Multiple approaches to mental disorder   |              |                           |
| 15   | 09/14   | 5th period BOKU [eJ-0]                     | Neural basis of mental disorder  |              |                           |
| 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(科目番号)                                | 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                                      | 2021 whole 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(B6)                                   |   |  | Fukuda Takaichi, Mizuno Hidenobu, Era Takumi, Orita Yoriyisa, Takemoto Makoto, Shioda Norifumi, Ito Yasuhiro, Hamasaki Tadashi, Inoue Toshihiro, Yamashita Satoshi |              |                           |
| Goals with their ratio(学修成果とその割合)                  |   |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・80% 2.学際的領域を理解できる深奥な教養力・・・20% |   |  |  |              |                           |
| 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)                        | <p>【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.</p> <p>【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.</p> |  |  |              |                           |
| 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  | 06/02   | 4th period, FUKUDA Takaichi [eEJ-0]        | General structure of the brain   |              |                           |
| 2  | 06/09   | 4th period, FUKUDA Takaichi [eEJ-0]        | Structure and function of the neocortex and hippocampus  |              |                           |
| 3  | 06/16   | 4th period, MIZUNO Hidenobu [eEJ-0]        | Postnatal development of the somatosensory forex   |              |                           |
| 4  | 06/23   | 4th period, FUKUDA Takaichi [eEJ-0]        | Structure and function of the visual system  |              |                           |
| 5  | 06/30   | 4th period, FUKUDA Takaichi [eEJ-0]        | Structure and function of the basal ganglia  |              |                           |
| 6  | 07/07   | 4th period, ERA Takumi [eJ-0,eE-0]         | Development and differentiation of neural crest cell, pluripotency   |              |                           |
| 7  | 07/14   | 4th period, ERA Takumi [eJ-0,eE-0]         | New medical application to diseases of the nervous system using stem cell  |              |                           |
| 8  | 07/21   | 4th period, TAKEMOTO Makoto [eE-0]         | Learning, memory, and emotion  |              |                           |
| 9  | 07/28   | 4th period, SHIODA Norifumi [eE-0]         | The potential of nucleic acid structures as a therapeutic target for neurological diseases   |              |                           |
| 10   | 08/04   | 4th period, HAMASAKI Tadashi [eEJ-0]       | Deformity of central nervous system and treatment  |              |                           |
| 11   | 08/18   | 4th period, ITOU Yasuhiro [eE-0]           | Pathology and treatment of retinal diseases  |              |                           |
| 12   | 08/25   | 4th period, INOUE Toshihiro [eE-0]         | Glaucoma pathophysiology and therapy   |              |                           |
| 13   | 09/01   | 4th period, ORITA Yoriyisa [eJ-0]          | Olfaction impairment and the treatment   |              |                           |
| 14   | 09/08   | 4th period, YAMASHITA Satoshi [eE-0]       | Regenerative medicine for neurodegenerative diseases   |              |                           |
| 15   | 09/15   | 4th period, YAMASHITA Satoshi [eE-0]       | State-of-the-art therapies for Parkinson's diseases  |              |                           |
| 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・資料の言語)              | Combination of Japanese and English   |  |  |              |                           |
| Course Based on Practical                          | Applicable (Fourteen out of fifteen classes are lectured by teachers with practical work experience in clinical   |  |  |              |                           |

Work Experience(実務経験  
を活かした授業)

medicine.)

| Course Coding(科目ナンバ-)   | 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   | 2021 whole 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, Tanigawa Shunsuke, Okano Masaki |  |                           |
| Goals with their ratio(学修成果とその割合)   |   |  |   |  |                           |
| 1.高度な専門的知識・技能及び研究力・・・50% 2.学際的領域を理解できる深奥な教養力・・・25% 3.グローバルな視野と行動力・・・20% 4.地域社会を牽引するリーダー力・・・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.  |  |   |  |                           |
| 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)   | <p>【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.</p> <p>【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.</p>   |  |   |  |                           |
| 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) Methods to generate transgenic and knockout mice (4) Genome editing technology; (5) Maintenance and differentiation of stem cells; (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   | 06/03   | 6th period                                 | Ryuichi Nishinakamura [eE-0]  | Developmental and regenerative medicine          |                           |
| 2   | 06/10   | 6th period                                 | Toru Takeo [eE-0]   | Reproductive engineering                         |                           |
| 3   | 06/17   | 5th period                                 | Masatake Araki [eEJ-0]  | Transgenic mouse, Knockout mouse                 |                           |
| 4   | 06/24   | 5th period                                 | Masatake Araki [eEJ-0]  | Production of genome edited mouse line           |                           |
| 5   | 07/01   | 5th period                                 | Hitoshi Niwa [eE-0]   | Molecular basis of embryonic stem cells I        |                           |
| 6   | 07/08   | 5th period                                 | Hitoshi Niwa [eE-0]   | Molecular basis of embryonic stem cells II       |                           |
| 7   | 07/15   | 5th period                                 | Takumi Era [eE-0]   | iPS cells, their applications for the medicine   |                           |
| 8   | 07/29   | 5th period                                 | Takaichi Fukuda [eE-0]  | Ontogeny and phylogeny                           |                           |
| 9   | 08/05   | 5th period                                 | Shigeyuki Esumi [eE-0]  | Anatomy of digestive tracts and lung             |                           |
| 10  | 08/19   | 5th period                                 | Takaichi Fukuda [eE-0]  | Anatomy of cardiac and urogenital systems        |                           |
| 11  | 08/26   | 5th period                                 | Shunsuke Tanigawa [eE-0]  | Kidney development and regeneration              |                           |
| 12  | 09/02   | 5th period                                 | Yusuke Ono [eE-0]   | Muscle development and regeneration              |                           |
| 13  | 09/09   | 5th period                                 | Akira Nakamura [eE-0]   | germ cell formation: preformation and epigenesis |                           |
| 14  | 09/16   | 5th period                                 | Keiichiro Ishiguro [eE-0]   | germ cell development in mammals                 |                           |
| 15  | 09/30   | 5th period                                 | Masaki Okano [eE-0]   | Epigenetics in development                       |                           |
| Required Textbook(テキスト)   |   |  |   |  |                           |
| Reading List(参考文献)  | <ul style="list-style-type: none"> <li>・ “Developmental Biology, 11th edition” by Scott Gilbert 2016.</li> <li>・ “Essential Developmental Biology, 3rd edition” by Slack JMW., Blackwell Publishing 2012</li> <li>・ “Manipulating the Mouse Embryo: A Laboratory Manual, 4th edition” by Nagy A., Gertsenstein M., Vintersten K., Behringer R., Cold Spring Harbor Laboratory Press, 2014.</li> <li>・ “Larsen” s Human Embryology, 5th edition” by Shoenwolf GC, Bleyl SB, Brauer PR, Francis-West PH. Churchill Livingstone, 2014.</li> </ul>  |  |   |  |                           |
| 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 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)   | 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  | 2021 whole 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.高度な専門的知識・技能及び研究力・・・25% 2.学際的領域を理解できる深奥な教養力・・・25% 3.グローバルな視野と行動力・・・10% 4.地域社会を牽引するリーダー力・・・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)  | <p>[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 &amp; health promotion, and individuals' basic human rights. Students will also comprehensively learn the role of medicine and law in maintaining social safety.</p> <p>[C level (C水準)]</p>  |  |   |              |                           |
| 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.(回数)  | Date(月日)   | Class Theme(授業テーマ)                         | Brief Outline of Class(内容概略)  |              |                           |
| 1  | 06/04  | 6th period Takahiko Katoh [eE-0, eJ-0]     | Meaning of social medicine  |              |                           |
| 2  | 06/11  | 6th period Takahiko Katoh [eE-0, eJ-0]     | Epidemiology  |              |                           |
| 3  | 06/18  | 5th period Hisamitsu Omori [eEJ-L]         | Medical Screening   |              |                           |
| 4  | 06/25  | 5th period Hirofumi Soejima [eEJ-L]        | General Medicine: Atherosclerosis   |              |                           |
| 5  | 07/02  | 5th period Hirofumi Soejima [eE-0, eJ-L]   | Blood Coagulation and Fibrinolysis  |              |                           |
| 6  | 07/09  | 5th period Hirofumi Soejima [eE-0, eJ-L]   | Lifestyle and Coronary Artery Disease   |              |                           |
| 7  | 07/16  | 5th period Xi Lu [eE-0]                    | Medical Statistics  |              |                           |
| 8  | 07/30  | 5th period Xi Lu [eE-0]                    | Research Design of Epidemiology   |              |                           |
| 9  | 08/06  | 5th period Yoko Nishitani [eE-0, eJ-L]     | Definition and purpose of forensic medicine   |              |                           |
| 10   | 08/20  | 5th period Yoko Nishitani [eE-0, eJ-L]     | Forensic medicine & forensic science  |              |                           |
| 11   | 08/27  | 5th period Yoko Nishitani [eE-0, eJ-L]     | Social aspect of human death (1)  |              |                           |
| 12   | 09/03  | 5th period Yoko Nishitani [eE-0, eJ-L]     | Social aspect of human death (2)  |              |                           |
| 13   | 09/10  | 5th period Chang-Nian Wei [eE-L, eJ-0]     | Environment-human system  |              |                           |
| 14   | 09/17  | 5th period Chang-Nian Wei [eE-L, eJ-0]     | Environmental indices and evaluation  |              |                           |
| 15   | 09/24  | 5th period Kunihiko Matsui [eJ-L]          | General Medicine: Clinical studies, interpretation for results  |              |                           |
| Required Textbook(テキスト)  | Textbooks are not specified, and handouts will be distributed.   |  |   |              |                           |
| Reading List(参考文献)   | <ul style="list-style-type: none"> <li>・ "Public Health &amp; Preventive Medicine" by Maxy-Rosenan-Last: (14 edit) Appleton &amp; Lange. 1998,</li> <li>・ "Forensic Pathology" by Bernard Knight, 2nd ed., Arnold, London, Sydney and Auckland, 1996.</li> </ul>   |  |   |              |                           |
| 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 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 (A teacher with practical work experience in Public Health, Regional Medicine, or Forensic Medicine will lecture.)

| Course Coding(科目ナンバ)   | 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  | 2021 whole 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)                  |  |  | MATSUI Hiroataka, MIKAMI Yoshiki, KOJIMA Akihiro, HIRAI Toshinori, KOMOHARA Yoshihiro, UEDA Mitsuharu, Jono Hirofumi, Misumi Youhei, SATO Yonosuke, BABA Masaya |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |  |   |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・45% 2.学際的領域を理解できる深奥な教養力・・・45% 3.グローバルな視野と行動力・・・5% 4.地域社会を牽引するリーダー力・・・5% |  |  |   |              |                           |
| 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)  | <p>[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.</p> <p>[C level (C水準)]<br/>Students are also expected to find devise a method to discover unsolved problems and lead to solutions.</p>  |  |   |              |                           |
| Course Outline(授業の概要)  | <p>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.</p> <p>In the field of Laboratory Medicine, modern technique and method for the detection of gene mutations will be shown and discussed.</p> <p>In the field of Radiology, detailed implication of CT and MRI images and their application for researchers will be presented.</p> <p>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.</p> <p>In the field of Neurology, recent advances in the neurological diagnosis will be given to the students.</p> |  |   |              |                           |
| 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  | 01/28  | 4th period Sato Y (Pathol Exp Med) [eJ-0]        | Tumor diagnosis with immunohistochemistry.  |              |                           |
| 2  | 02/01  | 4th period Baba M (Pathol Exp Med) [eJ-0]        | Molecular pathological diagnosis of malignancies.   |              |                           |
| 3  | 02/04  | 4th period Mikami Y (Pathol Diagnosis) [eJ-0]    | Histopathologic approach to diagnostic oncology: a logic for interpretation of morphology.  |              |                           |
| 4  | 02/08  | 4th period Ueda M(Neurology) [eJ-L]              | Recent advances in diagnostic methods for intractable neurological diseases   |              |                           |
| 5  | 02/15  | 4th period Misumi Y (Neurology) [eJ-L]           | Advanced diagnostic approaches for rare and inherited diseases  |              |                           |
| 6  | 02/18  | 4th period Komohara Y (Cell Pathol) [eJ-L]       | Immunopathology of non-tumoral diseases; aspect from macrophage biology   |              |                           |
| 7  | 02/22  | 4th period Komohara Y (Cell Pathol) [eJ-L]       | Immunopathology of malignant tumors; aspect from macrophage biology   |              |                           |
| 8  | 02/25  | 4th period Matsui H(Laboratory Medicine) [eJ-0]  | Application of next generation sequencing for clinical diagnosis  |              |                           |
| 9  | 03/01  | 4th period Matsui H (Laboratory Medicine) [eJ-0] | Practice and prospect of clinical diagnostic medicine   |              |                           |
| 10   | 03/04  | 4th period Jono H (Clin Pharm Sci) [eJ-0]        | Drug discovery research based on basic and clinical evidence  |              |                           |
| 11   | 03/08  | 4th period Hirai T (Diag Radiolo) [eJ-0]         | Forefront of MR imaging and research approaches   |              |                           |
| 12   | 03/11  | 4th period Hirai T (Diag Radiolo) [eJ-0]         | Forefront of CT imaging and research approaches   |              |                           |
| 13   | 03/15  | 4th period Kojima A (RI Sci) [eJ-0]              | RI tracer methods: basics and application of radioisotope measurements.   |              |                           |
| 14   | 03/18  | 4th period Kojima A (RI Sci) [eJ-0]              | RI molecular imaging.--   |              |                           |
| 15   | 03/22  | 4th period Matsui H (Laboratory Medicine)        | Makeup class for students who did not attend previous classes   |              |                           |
| 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 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.   |  |   |              |                           |
| Language Used in   | Japanese   |  |   |              |                           |

|  |  |
|--|--|
| Instruction(使用言語)                                      | Japanese   |
| 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(科目番号)                                | 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                                      | 2021 whole 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, Fukushima Satoshi, Murakami Daizou, Miyamaru Satoru, Ise Momoko, Hibi Taizou, TANAKA Yasuhito, Naoe Hideaki |              |                           |
| Goals with their ratio(学修成果とその割合)                  |   |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・80% 2.学際的領域を理解できる深奥な教養力・・・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.  |  |  |              |                           |
| 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 will be also discussed.  |  |  |              |                           |
| Course Learning goals(学修目標)                        | <p>【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.</p> <p>【C level (C水準)】</p>  |  |  |              |                           |
| 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  | 01/28   | 5th period Naoe Hideaki 【eJ-0】             | Progress in endoscopic treatment and diagnosis of gastrointestinal diseases  |              |                           |
| 2  | 02/01   | 5th period Tanaka Yasuhito 【eJ-0】          | State-of the art in diagnosis and treatment of hepatic disease   |              |                           |
| 3  | 02/04   | 5th period Tanaka Yasuhito 【eJ-0】          | Molecular targeting therapy in gastrointestinal & hepatic diseases   |              |                           |
| 4  | 02/08   | 5th period Sakagami Takuro 【eJ-0】          | Progress in diagnosis and treatment of respiratory diseases  |              |                           |
| 5  | 02/15   | 5th period Sakagami Takuro 【eJ-0】          | Topics of allergic respiratory diseases  |              |                           |
| 6  | 02/18   | 5th period Sakagami Takuro 【eJ-0】          | Topics of diagnosis and treatment of lung cancer   |              |                           |
| 7  | 02/22   | 5th period Miyamaru Satoru 【eJ-0】          | The diagnosis and management of dysphagia  |              |                           |
| 8  | 02/25   | 5th period Ise Momoko 【eJ-0】               | Treatment using cochlear implant for severe sensorineural hearing loss   |              |                           |
| 9  | 03/01   | 5th period Murakami Daizo 【eJ-0】           | Endoscopic treatment of head and neck diseases   |              |                           |
| 10   | 03/04   | 5th period Hibi Taizo 【eJ-0】               | Organ transplantation; the past and the present  |              |                           |
| 11   | 03/08   | 5th period Hibi Taizo 【eJ-0】               | Liver transplantation; basis and clinical application  |              |                           |
| 12   | 03/11   | 5th period Kamba Tomomi 【eJ-0】             | Current therapeutic strategy for urogenital cancers  |              |                           |
| 13   | 03/15   | 5th period Kamba Tomomi 【e-0】              | Endoscopic treatments for urinary diseases   |              |                           |
| 14   | 03/18   | 5th period Fukushima Satoshi 【eJ-0】        | Molecular targeting therapy for autoimmune diseases in skin  |              |                           |
| 15   | 03/22   | 5th period Fukushima Satoshi 【eJ-0】        | Immune therapy in skin cancer  |              |                           |
| Required Textbook(テキスト)                            | Textbooks are not specified, and handouts will be distributed.  |  |  |              |                           |
| Reading List(参考文献)                                 | <p>1) Molecular Cell Biology, sixth edition, by Lodish H, et al. W.H.Freeman, 2008</p> <p>2) Carithers RL Jr. Liver transplantation. American Association for the Study of Liver Diseases. Liver Transpl 2000 Jan;6 (1):122-35.</p>   |  |  |              |                           |
| 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 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) |
|--|--|--|---|--------------|---------------------------|
| RDM7-011-82-2  | 2021 whole 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)  |  |  | Oike Yuuichi, Yamamoto Tatsuo, Mukouyama Masashi, ARAKI Eiichi, Gotou Tomomi, Kaikita Kouichi, Adachi Masataka, Tsujita Kenichi, Yamamoto Eiichirou, Kuwabara Takashige, Sugita Michiko |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |  |   |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・30% 2.学際的領域を理解できる深奥な教養力・・・30% 3.グローバルな視野と行動力・・・30% 4.地域社会を牽引するリーダー力・・・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. 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 significance of personalized medicine by stratification of patients with acute coronary syndrome by evaluating genetic and environmental factors, (3) the pathogenesis of metabolic disorders including diabetes mellitus and diabetic vascular complications, and its therapeutic strategy, (4) the molecular mechanism of effects or secretion of insulin, (5) the molecular mechanism 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, the functional differentiation and regulation in each segment of nephron, (8) the pathogenesis of major renal diseases and the underlining mechanisms causing the pathological conditions, (9) influence and the mechanism of the operative stress to the metabolism and circulation, and therapeutic strategy for controlling these influences.   |  |   |              |                           |
| Course Learning goals(学修目標)  | <p>【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 mechanism of myocardial ischemia / reperfusion injury and cardiac remodeling in experimental acute myocardial infarction ;<br/>(3) Personalized medicine by stratification of patients with acute coronary syndrome by evaluating genetic and environmental factors;<br/>(4) Pathogenic mechanism of diabetes mellitus, diabetic complications, effects and secretion defect of insulin;<br/>(5) Molecular mechanism and therapeutic strategy for metabolic syndrome and the development of obesity that is 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 by operative stress (i.e. activation of sympathetic nervous system, pain, inflammatory reaction, etc) to the metabolism and circulation, and therapeutic strategy in based on understanding these influences.</p> <p>【C level (C水準)】<br/>You are able to understand each item listed above, however, you have not reached to the level to apply them to research study or clinical activity.</p> |  |   |              |                           |
| Course Outline(授業の概要)  | <p>1.Mechanisms of atherosclerosis evaluated by coronary imaging and the therapeutic strategies;<br/>2.Basic mechanism of myocardial ischemia / reperfusion injury and cardiac remodeling in experimental acute myocardial infarction ;<br/>3.Personalized medicine by stratification of patients with acute coronary syndrome by evaluating genetic and environmental factors;<br/>4.Pathogenic mechanism of diabetes mellitus, diabetic complications, effects and secretion defect of insulin;<br/>5.Molecular mechanism and therapeutic strategy for metabolic syndrome and the development of obesity that is 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 by operative stress (i.e. activation of sympathetic nervous system, pain, inflammatory reaction, etc) to the metabolism and circulation, and therapeutic strategy in based on understanding these influences.</p>   |  |   |              |                           |
| Details for Individual Classes(各回の授業内容)  |  |  |   |              |                           |
| No.(回数)  | Date(月日)   | Class Theme(授業テーマ)                         | Brief Outline of Class(内容概略)  |              |                           |
| 1  | 10/08  | Fri. 5th period Koichi Kaikita 【eE-0】      | Mechanism of myocardial ischemia/reperfusion injury   |              |                           |
| 2  | 10/15  | Fri. 5th period Eiichiro Yamamoto 【eE-L】   | Personalized medicine by genetic and environmental factors  |              |                           |
| 3  | 10/22  | Fri. 5th period Kenichi Tsujita 【eE-0】     | Mechanisms of atherosclerosis and therapeutic strategies  |              |                           |
| 4  | 10/29  | Fri. 5th period Michiko Sugita 【eE-0】      | Types and influences of operative stress  |              |                           |
| 5  | 11/05  | Fri. 5th period Tomomi Gotou 【eE-0,eJ-0】   | NO and nitrogen metabolism disorders  |              |                           |
| 6  | 11/12  | Fri. 5th period Eiichi Araki 【eE-0】        | Insulin and its action –their molecular basis   |              |                           |
| 7  | 11/19  | Fri. 5th period Eiichi Araki 【eE-0】        | Diabetic complications and their therapeutic approaches   |              |                           |



|  |       |   |   |
|--|-------|---|---|
| 8  | 11/26 | Fri. 5th period Tatsuo Yamamoto [eE-0]  | Physiological mechanism of influences by operative stress     |
| 9  | 12/03 | Fri. 5th period Tatsuo Yamamoto [eE-0]  | Therapeutic strategy controlling operative stress             |
| 10   | 12/10 | Fri. 5th period Masataka Adachi [eE-0]  | Potassium handling by the kidney                              |
| 11   | 12/17 | Fri. 5th period Takashige Kuwabara [eE-0]   | Structure and function of nephron                             |
| 12   | 12/24 | Fri. 5th period Masashi Mukoyama [eE-0]   | Sodium and water handling by the kidney                       |
| 13   | 01/07 | Fri. 5th period Tomomi Gotoh [eE-0,eJ-0]  | ER stress-related diseases                                    |
| 14   | 01/14 | Fri. 5th period Eiichi Araki  | Pathogenesis and therapies of metabolic diseases              |
| 15   | 01/21 | Fri. 5th period Yuichi Oike   | Molecular pathogenesis of age-related and life-style diseases |
| Required Textbook(テキスト)                                |       | Textbooks are not specified, and handouts will be distributed.  |   |
| Reading List(参考文献)                                     |       | <p>“Braunwald’ s Heart Disease: A Text of Cardiovascular Medicine, Eight edition” edited by Libby P et al. Saunders Press, Philadelphia, 2007.</p> <p>“Miller’ s Anesthesia, sixth edition” edited by Miller RD. Elsevier Churchill Livingstone, Philadelphia, 2005.</p> <p>“Brenner &amp; Rector’ s The Kidney 10th edition, Elsevier Comprehensive Clinical Nephrology 3rd edition, Mosby</p>   |   |
| 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 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)                     |       | 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(科目番号)  | 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  | 2021 whole 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, OKUYAMA Torayuki, HIBI Taizo, OHBA Takashi, MITSUBUCHI Hiroshi, NAKAZATO Hitoshi, MATSUMOTO Shiro, IWAI Masanori, SAITO Fumitaka, YAMAGUCHI Munekage, OZASA Shiro, KIDO Jun, SAKAMOTO Rieko, ISONO Kaori   |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力 ……30% 2.学際的領域を理解できる深奥な教養力 ……30% 3.グローバルな視野と行動力 ……30% 4.地域社会を牽引するリーダー力 ……10% |  |  |  |              |                           |
| 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 abdominal 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  | 10/07  | 5th Period. Torayuki Okuyama               | Enzyme replacement therapy and gene therapy for inherited diseases during childhood  |              |                           |
| 2  | 10/14  | 5th Period. Hitoshi Nakazato               | Hereditary Nephropathy   |              |                           |
| 3  | 10/21  | 5th Period. Kimitoshi Nakamura             | Inborn errors of metabolism  |              |                           |
| 4  | 10/28  | 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 myelination. |              |                           |
| 5  | 11/04  | 5th Period. Hiroshi Mitsubuchi             | Congenital abnormalities and genetic counseling  |              |                           |
| 6  | 11/11  | 5th Period. Shiro Ozasa                    | The Molecular Pathogenesis and Therapeutic Strategies of Pediatric Neuromuscular disorders — Duchenne Muscular Dystrophy and Spinal Muscular Atrophy —   |              |                           |
| 7  | 11/18  | 5th Period. Rieko Sakamoto                 | Hepatic diseases in children   |              |                           |
| 8  | 11/25  | 5th Period. Shiro Matsumoto                | Basic study for pediatric rare disease using iPS technology  |              |                           |
| 9  | 12/02  | 5th Period. Jun Kido                       | Current status of inherited amino acids metabolic disease in Japan : Treatment , long-term outcome and future challenge.   |              |                           |
| 10   | 12/09  | 5th Period. Takashi Ohba 【eJ-0】            | Prenatal diagnosis, current status and the ethics  |              |                           |
| 11   | 12/16  | 5th Period. Takashi Ohba                   | Placental physiology and pathology   |              |                           |
| 12   | 12/23  | 5th Period. Fumitaka Saito 【eJ-0】          | Endometrial physiology, pathology and carcinogenesis   |              |                           |
| 13   | 01/06  | 5th Period. Munekage Yamaguchi 【eJ-0】      | Villous macrophages in the human placenta: a variety of functions and perinatal complications  |              |                           |
| 14   | 01/13  | 5th Period. Masaki Honda 【eJ-0】            | Relationship between macrophages and microbiota in maintaining intestinal homeostasis  |              |                           |
| 15   | 01/20  | 5th Period. Taizo Hibi                     | Indications and outcomes of abdominal organ  |              |                           |

|  |  |                        |                              |
|--|--|------------------------|------------------------------|
| 15   | 01/20  | 5th Period. Taizo Hibi | transplantation for children |
| 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(科目番号)  | 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  | 2021 whole 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.高度な専門的知識・技能及び研究力……45% 2.学際的領域を理解できる深奥な教養力……35% 3.グローバルな視野と行動力……10% 4.地域社会を牽引するリーダー力……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, biliary 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  | 10/05  | (Tue) 4th period                           | Araki Norie [eEJ-L]                                     | Tumor Genetics and biology (introduction)  |                           |
| 2  | 10/12  | (Tue) 4th period                           | Araki Norie [eEJ-L]                                     | Tumor Genetics and biology 1               |                           |
| 3  | 10/19  | (Tue) 4th period                           | Araki Norie [eEJ-L]                                     | Tumor Genetics and biology 2               |                           |
| 4  | 10/26  | (Tue) 4th period                           | Baba Hideo [eEJ-0]                                      | Gastroenterological surgery (introduction) |                           |
| 5  | 11/02  | (Tue) 4th period                           | Baba Hideo [eE-0]                                       | Gastroenterological surgery 1              |                           |
| 6  | 11/09  | (Tue) 4th period                           | Baba Hideo [eE-0]                                       | Gastroenterological surgery 2              |                           |
| 7  | 11/16  | (Tue) 4th period                           | Baba Hideo [eE-0]                                       | Gastroenterological surgery 3              |                           |
| 8  | 11/30  | (Tue) 4th period                           | Baba Hideo [eE-0]                                       | Gastroenterological surgery 4              |                           |
| 9  | 12/07  | (Tue) 4th period                           | Baba Hideo [eE-0]                                       | Gastroenterological surgery 5              |                           |
| 10   | 12/14  | (Tue) 4th period                           | Nakayama Hideki [eEJ-0]                                 | Oral and maxillofacial tumors              |                           |
| 11   | 12/21  | (Tue) 4th period                           | Nakayama Hideki [eEJ-0]                                 | Diagnosis and treatment of oral cancer     |                           |
| 12   | 01/04  | (Tue) 4th period                           | Nakayama Hideki [eEJ-0]                                 | Challenges in oral cancer treatment        |                           |
| 13   | 01/11  | (Tue) 4th period                           | Suzuki Makoto [eE-0]                                    | Thoracic surgery (introduction)            |                           |
| 14   | 01/18  | (Tue) 4th period                           | Suzuki Makoto [eE-0]                                    | Lung cancer -----                          |                           |
| 15   | 01/25  | (Tue) 4th period                           | Suzuki Makoto [eE-0]                                    | Medistinal tumor -----                     |                           |
| 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)   | 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  | 2021 whole 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 Junichirou, 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.高度な専門的知識・技能及び研究力・・・70% 2.学際的領域を理解できる深奥な教養力・・・10% 3.グローバルな視野と行動力・・・10% 4.地域社会を牽引するリーダー力・・・10% |  |  |  |              |                           |
| Type of Class(授業の形態)   | Lecture  |  |  |              |                           |
| Teaching Method(授業の方法)   | Power point will be usually used in the lectures. 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 brachytherapy, 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  | 10/05  | 5th period Natsuo Oya [eJ-0]               | "Radiation biology and physics"  |              |                           |
| 2  | 10/12  | 5th period Natsuo Oya [eJ-0]               | "Stereotactic radiotherapy and intensity-modulated radiotherapy"   |              |                           |
| 3  | 10/19  | 5th period Ryuji Murakami [eJ-0]           | "Image-guided radiotherapy and adaptive radiotherapy"  |              |                           |
| 4  | 10/26  | 5th period Yutaka Yamamoto [eJ-0]          | "Biological features of breast cancer"   |              |                           |
| 5  | 11/02  | 5th period Yutaka Yamamoto [eJ-0]          | "Paradigm shift in breast cancer treatment"  |              |                           |
| 6  | 11/09  | 5th period Yutaka Yamamoto [eJ-0]          | "Molecular target therapy for breast cancer"   |              |                           |
| 7  | 11/16  | 5th period Takeshi Motohara [eJ-0]         | "Epidemiology of gynecological malignancies"   |              |                           |
| 8  | 11/30  | 5th period Fumitaka Saito [eJ-0]           | "Paradigm shift of the treatment for gynecological malignancies"   |              |                           |
| 9  | 12/07  | 5th period Takeshi Motohara [eJ-0]         | "Radiation therapy for gynecological malignancies"   |              |                           |
| 10   | 12/14  | 5th period Akitake Mukasa [eJ-0]           | "Character of brain tumor"   |              |                           |
| 11   | 12/21  | 5th period Akitake Mukasa [eJ-0]           | "Brain tumor diagnosis"  |              |                           |
| 12   | 01/04  | 5th period Akitake Mukasa [eJ-0]           | "Brain tumor therapy"  |              |                           |
| 13   | 01/11  | 5th period Eisaku Iwanaga [eJ-0]           | "Hematological oncology I - leukocytes"  |              |                           |
| 14   | 01/18  | 5th period Kisato Nosaka [eJ-0]            | "Hematological oncology II - lymphocytes"  |              |                           |
| 15   | 01/25  | 5th period Jun-chirou Yasunaga [eJ-0]      | "Hematological oncology III - Hematological malignancies induced by viruses"   |              |                           |
| Required Textbook(テキスト)  | Textbooks are not specified. Handouts may be distributed by instructors.   |  |  |              |                           |
| 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, 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 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  | 2021 whole 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)   |  |  | Miyamoto Takeshi, Fukushima Satoshi, Nishikawa Takeshi, KAMOHARA Hidenobu, KAWANO Hiroaki, Fukui Toshihiro, Harada Masahiro |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |  |   |              |                           |
| 1.高度な専門的知識・技能及び研究力……50% 2.学際的領域を理解できる深奥な教養力……30% 3.グローバルな視野と行動力……10% 4.地域社会を牽引するリーダー力……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)  | <p>【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.</p> <p>【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.</p> |  |   |              |                           |
| Course Outline(授業の概要)  | <p>In this class, the current situation and problems of restorative medicine are explained in terms of both life support and vital function.</p> <p>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.</p> <p>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.</p> <p>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.</p>   |  |   |              |                           |
| 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  | 10/06  | 4th period Satoshi Fukushima [eJ-0]        | Mechanism of Wound healing  |              |                           |
| 2  | 10/13  | 4th period Satoshi Fukushima [eJ-0]        | Reconstruction by local flap  |              |                           |
| 3  | 10/20  | 4th period Satoshi Fukushima [eJ-0]        | Reconstruction with microsurgery  |              |                           |
| 4  | 10/27  | 4th period Takeshi Miyamoto [eJ-0]         | Pathophysiology of bone metabolism  |              |                           |
| 5  | 11/10  | 4th period Takeshi Miyamoto [eJ-0]         | Physiology and biology of articular cartilage   |              |                           |
| 6  | 11/17  | 4th period Takeshi Miyamoto [eJ-0]         | Inflammatory arthritis  |              |                           |
| 7  | 11/24  | 4th period Takeshi Nishikawa [eJ-0]        | Hypothesis and Design of Clinical Researches  |              |                           |
| 8  | 12/01  | 4th period Hidenobu Kamohara [eJ-0]        | The novel diagnosis and therapeutic strategies of sepsis  |              |                           |
| 9  | 12/08  | 4th period Hidenobu Kamohara [eJ-0]        | The mechanisms of organ failure developed from sepsis   |              |                           |
| 10   | 12/15  | 4th period Hiroaki Kawano [eJ-0]           | Risk factors for acute coronary syndrome and gender difference  |              |                           |
| 11   | 12/22  | 4th period Toshihiro Fukui [eJ-0]          | Surgical treatment of heart failure   |              |                           |
| 12   | 01/05  | 4th period Toshihiro Fukui [eJ-0]          | Surgical treatment of ischemic heart disease  |              |                           |
| 13   | 01/12  | 4th period Toshihiro Fukui [eE-0]          | Surgery of valvular heart disease   |              |                           |
| 14   | 01/19  | 4th period Takeshi Nishikawa [eJ-0]        | Hypothesis and design from the perspective of diabetic complications researches   |              |                           |
| 15   | 01/26  | 4th period Masahiro Harada [eJ-0]          | Handling of clinical data and statistical analysis in clinical research   |              |                           |
| Required Textbook(テキスト)  | Textbooks are not specified, and handouts will be distributed.   |  |   |              |                           |

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| 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)   | 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  | 2021 whole 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 Yoriyoshi, Baba Hideo, TANAKA Yasuhito, Nakayama Hideki, Nosaka Kisato, Yamamoto Yutaka, Hibi Taizou, Miyamoto Takeshi, Fukushima Satoshi, Motohara Takeshi |              |                           |
| Goals with their ratio(学修成果とその割合)                                      |   |  |   |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・60% 2.学際的領域を理解できる深奥な教養力・・・35% 3.グローバルな視野と行動力・・・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) otolaryngological 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. 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) otolaryngological 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  | 01/27   | (Thu)5th period Yasuhito Tanaka 【eJ-0】     | Medical treatment of the gastrointestinal cancer  |              |                           |
| 2  | 01/31   | (Mon)5th period Hideo Baba 【eJ-0】          | Surgical cure of the digestive cancer   |              |                           |
| 3  | 02/03   | (Thu)5th period Takuro Sakagami 【eJ-0】     | Medical treatment of the lung cancer  |              |                           |
| 4  | 02/07   | (Mon)5th period Makoto Suzuki 【eJ-0】       | Surgical treatment of the lung cancer   |              |                           |
| 5  | 02/10   | (Thu)5th period 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  | 02/14   | (Mon)5th period Yoriyoshi Orita 【eJ-0】     | The treatment of the head and neck cancer   |              |                           |
| 7  | 02/17   | (Thu)5th period Takeshi Miyamoto 【eJ-0】    | The treatment of the bone soft part tumor   |              |                           |
| 8  | 02/21   | (Mon)5th period Yutaka Yamamoto 【eJ-0】     | Treatment of breast cancer  |              |                           |
| 9  | 02/24   | (Thu)5th period Takeshi Motohara 【eJ-0】    | The treatment of the gynecologic malignant tumor  |              |                           |
| 10   | 02/28   | (Mon)5th period Tomomi Kamba 【eJ-0】        | The treatment of genitourinary cancers  |              |                           |
| 11   | 03/03   | (Thu)5th period Satoshi Fukushima 【eJ-0】   | Skin cancer therapy__   |              |                           |
| 12   | 03/07   | (Mon)5th period Taizo Hibi 【eJ-0】          | Pediatric Solid Cancer Therapy  |              |                           |
| 13   | 03/10   | (Thu)5th period Akitake Mukasa 【eJ-0】      | The treatment of the brain tumor  |              |                           |
| 14   | 03/14   | (Mon)5th period Kisato Nosaka 【eJ-0】       | The treatment of the hematologic malignancies   |              |                           |
| 15   | 03/17   | (Thu)5th period Natsuo Ohya 【eJ-0】         | Radiotherapy of the cancer  |              |                           |
| 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)   | <ul style="list-style-type: none"> <li>• A new clinical oncology</li> <li>• Cancer principles &amp; practice of oncology, V.T. DeVita, S.Hellman, S.A.Rosenberg, Lippincott Williams &amp; Wilkins</li> <li>• Clinical Oncology, M.D.Abeloff, J.O. Armitage, J.E.Niederhuber, M.B.Kastan, W.G.McKenna, Elsevier</li> <li>• Cancer Medicine, Holland-Frei, AACR</li> <li>• The biology of Cancer, R.A.Weinberg, Garland Science</li> <li>• NCCN guideline</li> </ul>   |  |   |              |                           |
| 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   |  |   |              |                           |

|  |   |
|--|---|
| Assessment Methods and Criteria(評価方法・基準)               | 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  | 2021 whole 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)   |  |  | Yamamoto Tatsuo              |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |  |                              |              |                           |
| 1.高度な専門的知識・技能及び研究力 ……30% 2.学際的領域を理解できる深奥な教養力 ……40% 3.グローバルな視野と行動力 ……15% 4.地域社会を牽引するリーダー力 ……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  |  |  |                              |              |                           |
| 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-)  | 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  | 2021 whole 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(C10 Learning of The Theory of Clinical Research) |  |  | Kadooka Yasuhiro, Hamada Akinobu, Tamura Kenji, Suzuki Makoto, Mukasa Akitake, Kanba Tomomi, BABA Hideo, YAMAMOTO Yutaka, USUKU Koichiro |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |  |  |              |                           |
| 1. 高度な専門的知識・技能及び研究力 ……100%   |  |  |  |              |                           |
| 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)  | <p>[A level (A水準)]</p> <p>1) To conduct scientifically rational and ethical research</p> <p>2) To play a role as a project member in a large-scale or multicenter clinical study</p> <p>3) To interpret research findings enough to apply into clinical practice</p> <p>4) To broaden knowledge about clinical researches and standard treatments for malignancies</p> <p>[C level (C水準)]</p> <p>1) To comprehend scientific rationale clinical research</p> <p>2) To comprehend methods to conduct clinical research</p> <p>3) To comprehend development and strategies of anti-cancer drugs</p>  |  |  |              |                           |
| 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  | 10/04  | 5th period, Kadooka Yasuhiro, eEJ-O        | History of ethics for clinical research  |              |                           |
| 2  | 10/11  | 5th period, Kadooka Yasuhiro, eEJ-O        | Details of ethical guideline for clinical research   |              |                           |
| 3  | 10/18  | 5th period, Usuku Koichiro, eJ-O, eE-O     | Epidemiological background of clinical trials  |              |                           |
| 4  | 10/25  | 5th period, Akinobu Hamada, eEJ-O          | Pharmacokinetics/Pharmacodynamics of anti-tumor agents   |              |                           |
| 5  | 11/01  | 5th period, Kenji Tamura, eEJ-O            | Pharmacokinetics/Pharmacodynamics of anti-tumor agents   |              |                           |
| 6  | 11/08  | 5th period, Yutaka Yamamoto, eEJ-O         | Design and Assessment of clinical trials   |              |                           |
| 7  | 11/15  | 5th period, Makoto Suzuki, eE-O            | Clinical trials on lung cancer (1)   |              |                           |
| 8  | 11/22  | 5th period, Makoto Suzuki, eE-O            | Clinical trials on lung cancer (2)   |              |                           |
| 9  | 11/29  | 5th period, Hideo Baba, eE-O               | Clinical trials on gastric cancer  |              |                           |
| 10   | 12/06  | 5th period, Hideo Baba, eE-O               | Clinical trials on colorectal cancer   |              |                           |
| 11   | 12/13  | 5th period, Hideo Baba, eE-O               | Clinical trials on hepatic cell carcinoma  |              |                           |
| 12   | 12/20  | 5th period, Yutaka Yamamoto, eEJ-O         | Clinical trials on breast cancer (1)   |              |                           |
| 13   | 12/27  | 5th period, Yutaka Yamamoto, eEJ-O         | Clinical Trials on breast cancer (2)   |              |                           |
| 14   | 01/17  | 5th period, Tomomi Kamba, eEJ-O            | Clinical Trials on urinary organ cancer  |              |                           |
| 15   | 01/24  | 5th period, Hirota Iwase, eEJ-O            | Clinical Trials on malignant brain tumor   |              |                           |
| Required Textbook(テキスト)  |  |  |  |              |                           |
| Reading List(参考文献)   | <p>Emanuel EJ. et al. The Oxford Textbook of Clinical Research Ethics. Oxford University Press., 2008</p> <p>Breast Cancer, Molecular Genetics, Pathogenesis, and Therapeutics” edited by Bowcock, HUMANA PRESS, 2004</p> <p>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.</p> <p>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.</p> |  |  |              |                           |
| 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 Instruction(使用言語)   | Japanese and English   |  |  |              |                           |
| Textbook/Material  | Combination of Japanese and English  |  |  |              |                           |

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| 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 research 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  | 2021 whole 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()  |  |  | Tomizawa Kazuhito, Morinaga Jun                  |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・50% 2.学際的領域を理解できる深奥な教養力・・・30% 3.グローバルな視野と行動力・・・10% 4.地域社会を牽引するリーダー力・・・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>【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.(回数)  | Date(月日)   | Class Theme(授業テーマ)                         | Brief Outline of Class(内容概略)                     |              |                           |
| 1  | 10/04  | 4th period Jun Morinaga                    | Description of data                              |              |                           |
| 2  | 10/11  | 4th period Jun Morinaga                    | Comparing two groups                             |              |                           |
| 3  | 10/18  | 4th period Jun Morinaga                    | Comparing three or more groups                   |              |                           |
| 4  | 10/25  | 4th period Jun Morinaga                    | Correlation and simple linear regression         |              |                           |
| 5  | 11/01  | 4th period Jun Morinaga                    | Contingency table analysis                       |              |                           |
| 6  | 11/08  | 4th period Jun Morinaga                    | Statistical inference, bias, confounders, errors |              |                           |
| 7  | 11/15  | 4th period Jun Morinaga                    | Statistical design 1                             |              |                           |
| 8  | 11/22  | 4th period Jun Morinaga                    | Statistical design 2                             |              |                           |
| 9  | 11/29  | 4th period Jun Morinaga                    | Statistical design 3                             |              |                           |
| 10   | 12/06  | 4th period Jun Morinaga                    | Dataset  |              |                           |
| 11   | 12/13  | 4th period Jun Morinaga                    | Multivariate analysis 1                          |              |                           |
| 12   | 12/20  | 4th period Jun Morinaga                    | Multivariate analysis 2                          |              |                           |
| 13   | 12/27  | 4th period Jun Morinaga                    | Multivariate analysis 3                          |              |                           |
| 14   | 01/17  | 4th period Jun Morinaga                    | Survival data analysis 1                         |              |                           |
| 15   | 01/24  | 4th period Jun Morinaga                    | Survival data analysis 2                         |              |                           |
| 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   | 2021 whole 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 clinical study(Overview of clinical study (C12) )   |  |  | Tomizawa Kazuhito, Todaka Koji, Funakoshi Kota, Uchiyama Makiko, Kakuma Tatsuyuki, MATSUSHITA Shuzo, SANUKI Tetsuji, Miyashita azusa, Kadooka Yasuhiro, Tsujita Kenichi, USUKU Koichiro |              |                           |
| 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)  |  |  |   |              |                           |
| Course Goals(授業の目的)   |  |  |   |              |                           |
| Course Learning goals(学修目標)   | <p>[A level (A水準)]<br/>To be able to understand enough the outline of clinical study, research ethics, regulation, data acquisition and management, study design, publication.</p> <p>[C level (C水準)]<br/>To be able to understand the outline of clinical study, research ethics, regulation, data acquisition and management, study design, publication.</p> |  |   |              |                           |
| Course Outline(授業の概要)   | This course consists as follows; 1) Outline and significance of clinical study and regulatory science. 2) Regulation, research ethics, rules. 3) Study design, data management. 4) You learn the conduct and publication of clinical study and case examples. 5) Collaborative Institutional Training Initiative (CITI) Japan is also used.                    |  |   |              |                           |
| 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   |  | Miyashita Azusa, [eJ-0]                    | Introduction of this course, Outline of clinical study  |              |                           |
| 2   |  | Kadooka Yasuhiro, [eJ-0]                   | Paradigm of Research Ethics   |              |                           |
| 3   |  | Kadooka Yasuhiro, [eJ-0]                   | Points of Participants Protection in Clinical Research  |              |                           |
| 4   |  | Todaka Koji, [eJ-0]                        | Outline of regulatory science   |              |                           |
| 5   |  | Uchiyama Makiko, [eJ-0]                    | Regulation of drug development  |              |                           |
| 6   |  | Uchiyama Makiko, [eJ-0]                    | Management of clinical study  |              |                           |
| 7   |  | Funakoshi Kouta, [eJ-0]                    | Regulation of medical device development  |              |                           |
| 8   |  | Usuku Koichiro, [eJ-0]                     | Construction of data acquisition and utilization of AI  |              |                           |
| 9   |  | Kakuma Tatsuyuki, [eJ-0]                   | Study design-1  |              |                           |
| 10  |  | Kakuma Tatsuyuki, [eJ-0]                   | Study design-2  |              |                           |
| 11  |  | Tsujita Kenichi, [eJ-0]                    | Conduct and publication of clinical study   |              |                           |
| 12  |  | Sanuki Tetsuji, [eJ-0]                     | Management of medical device development  |              |                           |
| 13  |  | MATSUSHITA Shuzo, [eJ-0]                   |   |              |                           |
| 14  |  | CITI Japan                                 | Course 06   |              |                           |
| 15  |  | CITI Japan                                 | Course 06   |              |                           |
| 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)  | We evaluate the attendance state of e-learning and CITI Japan and understanding degree about the matter which we raised to the course goals. Students' understanding will be evaluated on the basis of quizzes to be scored from 0 to 100.   |  |   |              |                           |
| 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   |  |   |              |                           |

## Academic Year 2021, D1 Medical & Life Science Seminar

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

| No | Schedule        | Talker                | Title   | Affiliation  | Inviter   |
|----|-----------------|-----------------------|---|--|---|
| 1  | Apr 21<br>(WED) | OHTA<br>Kunimasa      | Dysfunction of the proteoglycan Tsukushi causes hydrocephalus through altered neurogenesis in the subventricular zone | Professor, Stem Cell Biology Faculty of Arts and Science, Kyushu University  | Tumor Genetics and Biology                      |
| 2  | May 12<br>(WED) | NAKAMURA<br>Shuhei    | Autophagy in aging and disease  | Associate Professor, Institute for Advanced Co-Creation Studies, Osaka University  | Stem Cell Stress                                |
| 3  | May 19<br>(WED) | OKUNO<br>Hiroyuki     | Activity-dependent gene expression and cognitive function   | Professor, Lab of Biochemistry and Molecular biology, Graduate School of Medical and Dental Sciences, Kagoshima University | Neuropsychiatry                                 |
| 4  | Jun 9<br>(WED)  | HAYASHI<br>Yu         | Why do we sleep? Insights from studies using mouse and <i>C. elegans</i>  | Professor, Graduate School of Medicine, University of Kyoto  | Cardiovascular Medicine                         |
| 5  | Jul 7<br>(WED)  | YAMANAKA<br>Soichiro  | Chromatin dynamics in embryonic germ cell   | Associate Professor, Department of Biological Sciences, Graduate School of Science, The University of Tokyo                | Chromosome Biology                              |
| 6  | Jul 14<br>(WED) | NAITO<br>Hisamichi    | Mechanism of angiogenesis and endothelial cell heterogeneity  | Associate Professor, Department of Signal Transduction, The Research Institute for Microbial Diseases, Osaka University    | Cell Modulation                                 |
| 7  | Sep 1<br>(WED)  | YAMASHITA<br>Takayuki | X-optogenetics and its application to deep tissue manipulation  | Professor, Department of Physiology, Fujita Health University School of Medicine   | Stem Cell Stress                                |
| 8  | Oct 6<br>(WED)  | UCHIYAMA<br>Yasuo     | Three dimensional structures of intracellular membrane organelles   | Research Professor, Department of Cellular and Molecular Neuropathology, Juntendo University Graduate School of Medicine   | Histology                                       |
| 9  | Oct 13<br>(WED) | KAGEYAMA<br>Ryoichiro | Dynamic transcriptional control of neural stem cells  | Professor, Laboratory of Growth Regulation System, Institute for Frontier Life and Medical Sciences, Kyoto University      | Hematology, Rheumatology and Infectious Disease |
| 10 | Feb 2<br>(WED)  | HOSHINO<br>Ayuko      | Exosomes, new players in the field of metastasis  | Associate Professor, Department of Life Science and Technology, Tokyo Institute of Technology                              | Transcriptional Regulation in Leukemogenesis    |

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/medgrad/gakunai/seminar/>)



## Academic Year 2021, D2 Learning from Experienced Doctors Seminar

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

| No | Schedule        | Talker               | Title   | Affiliation  | Inviter  |
|----|-----------------|----------------------|---|--|--|
| 1  | Jun 2<br>(WED)  | KATAOKA<br>Keisuke   | Genetic dissection of lymphoma pathogenesis by cutting-edge techniques.                       | Professor, Division of Hematology<br>Department of Internal Medicine<br>Keio University School of Medicine   | Transcriptional<br>Regulation in<br>Leukemogenesis     |
| 2  | Jun 30<br>(WED) | NAWA<br>Hiroyuki     | Neuroscience of Hallucination   | Professor, Niigata Univ Brain<br>Research Institute,   | Molecular Brain<br>Science                             |
| 3  | Jul 21<br>(WED) | NAGASE<br>Hiroki     | Chemical Genome instigators:<br>Genomics Revolution by Minor<br>Groove Binders                | Director, Chiba Cancer Center<br>Research Institute  | Cell Modulation  |
| 4  | Aug 4<br>(WED)  | MORIOKA<br>Norimitsu | Disorders of emotional and<br>cognitive function in chronic<br>pain: involvement of microglia | Professor, Department of<br>Pharmacology, Hiroshima<br>University Graduate School of<br>Biomedical & Health Sciences   | Neuropsychiatry  |
| 5  | Sep 8<br>(WED)  | FUJIMOTO<br>Akihiro  | Identification of structural<br>variations and analysis of their<br>functional roles          | Professor, Department of Human<br>Genetics, Graduate School of<br>Medicine, The University of Tokyo  | Hematology, Rheumat<br>ology and Infectious<br>Disease |
| 6  | Sep 15<br>(WED) | EGAWA<br>Shinichi    | Fundamental Knowledge in<br>Disaster Medicine   | Professor, Division of International<br>Cooperation for Disaster Medicine,<br>International Research Institute of<br>Disaster Science (IRIDeS), Tohoku<br>University | Emergency and<br>General Medicine                      |
| 7  | Oct 20<br>(WED) | OHASHI<br>Jun        | A genetic perspective on the<br>population history of Japan                                   | Associate Professor, Department of<br>Biological Sciences, Graduate School<br>of Science, the University of Tokyo  | Molecular Brain<br>Science                             |
| 8  | Nov 17<br>(WED) | SAYA<br>Hideyuki     | Forty years of fighting cancer  | Professor, Division of Gene<br>Regulation, Institute for Advanced<br>Medical Research, School of<br>Medicine, Keio University  | Tumor Genetics and<br>Biology                          |
| 9  | Dec 1<br>(WED)  | KOMURA<br>Yutaka     | Neural Network for<br>Consciousness   | Professor, Graduate School of<br>Human and Environmental Studies   | Neurosurgery   |
| 10 | Dec 8<br>(WED)  | KINUYA<br>Seigo      | Radionuclide Theranostics   | Professor, Department of Nuclear<br>Medicine, Kanazawa University  | Histology  |

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

## A report format of “D1: Medical and Life Science Seminar”

Write 2 essays based on 2 talks chosen from the seminar “D1: Medical and Life Science Seminar”. Length of the essays should be 250-500 words. “D1 :“Medical and Life Science Seminar” requires students to attend more than 15 lectures for credit before completion of their Thesis research. Send each essay to the supervisor (inviter of the talker) of the talk within one month by E-mail (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](mailto: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 schools of medicine, Medical Course , (Doctor) D1“Medical and Life Science Seminar” 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 |                   |          |      |

## A report format of “D2: Learning from Experienced Doctors Seminar”

Write 2 essays based on 2 talks chosen from the seminar “D2: Learning from Experienced Doctors Seminar”. Length of the essays should be 250-500 words. “D2: Learning from Experienced Doctors Seminar” requires students to attend more than 15 lectures for credit before completion of their Thesis research. Send each essay to the supervisor (inviter of the talker) of the talk within one month by E-mail (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](mailto: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 schools of medicine, Medical Course, (Doctor) D2 “Learning from Experienced Doctors Seminar” 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 |                   |          |      |

**Approval of Credits of Elective Subject in Doctoral Course,  
D3 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) The affiliation of Kumamoto University must be listed. If your affiliation is not listed as Kumamoto University, your co-speaker must include an academic advisor.
- 4) Only in FY2020, credits can be earned by attending web meetings as well. If you cannot submit a certificate of participation in the academic meeting, we will accept it with the proof of your academic advisor.

## **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.

## Academic Year 2021, D5: International Biomedical Research Seminars

- Place: Meeting Lounge, IRCMS 1F (virtual seminars due to the pandemic)
- Time & Date: From 16:30 (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 2021 to March 2022, 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     | Jinju Han               | TBA  | Assistant Professor, Graduate School of Medical Science and Engineering, KAIST, Korea   |
| 2.  | May       | Injune Kim              | TBA  | Associate Professor, Graduate School of Medical Science and Engineering, KAIST, Korea   |
| 3.  | June      | Masayo Takahashi        | TBA  | President, Vision Care, Inc.  |
| 4.  | July      | Brenda Bloodgood        | TBA  | Associate Professor, Division of Biological Sciences, University of California, San Diego, USA  |
| 5.  | August    | Masahiro Shin           | TBA  | Assistant Professor, Department of Molecular, Cell and Cancer Biology, University of Massachusetts Medical School, USA                                      |
| 6.  | September | Paola Betancur          | TBA  | Assistant Professor, Department of Radiation Oncology, University of California, San Francisco, USA   |
| 7.  | October   | Nina Cabezas-Wallscheid | TBA  | Group Leader, Max Planck Institute of Immunobiology and Epigenetics, Germany (Visiting Associate Prof., IRCMS)  |
| 8.  | October   | Roland Huber            | The intersection of Structure and Genomics: Functional RNA Structures in Viral Genomes | Assistant Principal Investigator, Bioinformatics Institute, Biomedical Sciences Institutes, Agency for Science, Technology and Research (A*STAR), Singapore |
| 9.  | November  | Zilong Wen              | TBA  | Professor, Division of Life Science, The Hong Kong Univ of Science and Technology, China  |
| 10. | December  | Jay Shin                | TBA  | Team Leader, Laboratory for Advanced Genomics Circuit, RIKEN Center for Integrative Medical Sciences, Japan   |
| 11. | January   | Xinyang Zhao            | TBA  | Associate Professor, Department of Biochemistry and Molecular Genetics, School of Medicine, The University of Alabama at Birmingham, USA                    |
| 12. | February  | Fabiana Perna           | TBA  | Associate Professor, Division of Hematology/Oncology, School of Medicine, Indiana University, USA   |
| 13. | March     | Ly Vu                   | TBA  | Assistant Professor, Department of Molecular Biology and Biochemistry, Simon Fraser University, Canada  |

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](mailto: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](mailto: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)



## Academic Year 2021 Graduate School's Medical Experiment Course

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

| Date                       |                            | AM                  |   | PM   |                     |   |
|----------------------------|----------------------------|---------------------|---|--|---------------------|---|
| <b>April 5<br/>(Mon.)</b>  | 1                          | 8:45<br>~<br>10:15  | Introduction to recombinant DNA technique<br><br>(Molecular Genetics : KAZUTOYO Terada)                                   | 3  | 13:15<br>~<br>14:45 | Principle and application of polymerase chain reaction<br><br>(Medical Biochemistry : SATO Yoshifumi)           |
|                            | 2                          | 10:30<br>~<br>12:00 | Gene Trasfer Technique<br><br>(Molecular Physiology : CHUJO Takeshi)  | 4  | 15:00<br>~<br>16:30 | Research Integrity<br><br>(Bioethics : KADOOKA Yasuhiro)  |
| <b>April 6<br/>(Tue.)</b>  | 5                          | 8:45<br>~<br>10:15  | Cell imaging and quantitative analysis<br><br>(Chromosome Biology: ISHIGURO Keiichiro)                                    | 7  | 13:15<br>~<br>14:45 | Analysis of Transcriptional Regulation<br><br>(Cell Signaling and Metabolic Medicine :<br>KANAMORI Yohei)       |
|                            | 6                          | 10:30<br>~<br>12:00 | Protein Purification (General Methods)<br><br>(Molecular Cell Biology : YAMANAKA<br>Kunitoshi )                           | 8  | 15:00<br>~<br>16:30 | Pharmacokinetics<br><br>(Pharmacology and Therapeutics :<br>SARUWATARI Jyunji)                                  |
| <b>April 7<br/>(Wed.)</b>  | 9                          | 8:45<br>~<br>10:15  | Production of polyclonal and monoclonal antibodies<br><br>(Immunology : IRIE Atsushi)                                     | 11   | 13:15<br>~<br>14:45 | Analytical methods for intracellular signaling<br><br>(Infection and Hematopoiesis : SUZU Shinya)               |
|                            | 10                         | 10:30<br>~<br>12:00 | Reproductive Engineering Techniques<br><br>(Reproductive Engineering: TAKEO Toru)   | 12   | 15:00<br>~<br>16:30 | Immunohistochemistry<br><br>(Cell Pathology : KOMOHARA Yoshihiro)   |
| <b>April 9<br/>(Fri.)</b>  | 13                         | 10:30<br>~<br>12:00 | Basic Methods in Immunology<br><br>(Immunology : IRIE Atsushi)  | 14   | 15:00<br>~<br>16:30 | Proteomics<br><br>(Tumor Genetics and Biology : ARAKI Norie)  |
|                            | <b>April 12<br/>(Mon.)</b> | 15                  | 8:45<br>~<br>10:15  | Experimental animals and animal Experimentations<br>I<br><br>(Division of Microbiology and Genetics:<br>TORIGOE Daisuke) | 17                  | 13:15<br>~<br>14:45   |
| 16                         |                            | 10:30<br>~<br>12:00 | Experimental animals and animal Experimentations<br>II<br><br>(Division of Microbiology and Genetics:<br>TORIGOE Daisuke) | 18   | 15:00<br>~<br>16:30 | In situ hybridization<br><br>(Molecular Pharmacology : KIKUCHI Koji)  |
| <b>April 13<br/>(Tue.)</b> | 19                         | 8:45<br>~<br>10:15  | Practice and Guidance for Biological Laboratory<br>Safety<br><br>(Medical Virology: MAEDA Yosuke)                         | 21   | 13:15<br>~<br>14:45 | Guidance for Living Modified Organism (LMO)<br>【e-learning only】<br><br>(Division of Genomics : ARAKI Masatake) |
|                            | 20                         | 10:30<br>~<br>12:00 | Introduction to flowcytometry<br><br>(Immunology : IRIE Atsushi))   | 22   | 15:00<br>~<br>16:30 | Methods for Literature Search<br>【e-learning only】<br><br>(Anatomy : FUKUDA Takaichi)                           |

※The lectures will be given in Japanese.

# Developmental Biology and Regenerative Medicine

| Course Coding(科目ナンバ-)   | 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   | 2021 whole 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, NAKANISHI Hiroyuki, ERA Takumi, ONO Yusuke, YAMANAKA Kunitoshi, NAKAO Mitsuyoshi, NISHINAKAMURA Ryuichi, OKANO Masaki |              |                           |
| Goals with their ratio(学修成果とその割合)   |  |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・50% 2.学際的領域を理解できる深奥な教養力・・・30% 3.グローバルな視野と行動力・・・10% 4.地域社会を牽引するリーダー力・・・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. 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 filed. 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 cell differentiation and growth, cell adhesion and cell-cell interactions essential for the organogenesis, pluripotent stem cells and tissue stem cells, developmental mechanism of organogenesis derived from ectoderm, endoderm and mesoderm and the molecular basis of epigenetic cell regulation in development and human diseases.   |  |  |              |                           |
| Course Learning goals(学修目標)   | <p>【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) cell adhesion and cell-cell interactions essential for the organogenesis, (3) pluripotent stem cells and tissue stem cells, (4) developmental mechanism of organogenesis derived from ectoderm, endoderm and mesoderm, (5) molecular basis of epigenetic cell regulation in development and human diseases.</p> <p>【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) cell adhesion and cell-cell interactions essential for the organogenesis, (3) pluripotent stem cells and tissue stem cells, (4) developmental mechanism of organogenesis derived from ectoderm, endoderm and mesoderm, (5) molecular basis of epigenetic cell regulation in development and human diseases.</p> |  |  |              |                           |
| Course Outline(授業の概要)   | <p>Following topics including the most recent progresses will be shown and discuss in addition to reading original papers.</p> <ul style="list-style-type: none"> <li>Stem cell and regenerative medicine</li> <li>Development of hematopoietic stem cells</li> <li>Development and regeneration of the nervous system</li> <li>Cell lineage and developmental regulation of the nematode C. elegans</li> <li>C. elegans as a model for human diseases</li> <li>Membrane dynamics</li> <li>Skeletal muscle development and regeneration</li> <li>Kidney development and regeneration</li> <li>Epigenetic cell regulation in cell differentiation and transformation</li> </ul>   |  |  |              |                           |
| 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   | 10/07  | Thu. 4th period. Takumi Era [eE-0]         | Pluripotent and tissue stem cells  |              |                           |
| 2   | 10/14  | Thu. 4th period. Takumi Era [eE-0]         | Stem cell, disease and clinical application  |              |                           |
| 3   | 10/21  | Thu. 4th period. Minetaro Ogawa            | Development of the hematopoietic system  |              |                           |
| 4   | 10/28  | Thu. 4th period. Minetaro Ogawa            | Development of hematopoietic stem cells  |              |                           |
| 5   | 11/04  | Thu. 4th period. Kenji Shimamura [eEJ-L]   | Neural stem cell biology and regenerative medicine   |              |                           |
| 6   | 11/11  | Thu. 4th period. Kunitoshi Yamanaka        | Cell lineage and developmental regulation of the nematode C. elegans   |              |                           |
| 7   | 11/18  | Thu. 4th period. Kunitoshi Yamanaka        | C. elegans as a model for human diseases   |              |                           |
| 8   | 11/25  | Thu. 4th period. Hiroyuki Nakanishi [eE-0] | Membrane dynamics____  |              |                           |
| 9   | 12/02  | no schedule                                | Annual Meeting of the MBSJ   |              |                           |
| 10  | 12/09  | Thu. 4th period. Yusuke Ono [eE-0]         | Skeletal muscle development and regeneration   |              |                           |
| 11  | 12/16  | Thu. 4th period. Yusuke Ono [eE-0]         | Skeletal muscle plasticity   |              |                           |
| 12  | 12/23  | Thu. 4th period. Ryuichi Nishinakamura     | Development of kidney__  |              |                           |
| 13  | 01/06  | Thu. 4th period. Masaki Okano              | Regulatory mechanism of epigenetics in development   |              |                           |
| 14  | 01/13  | Thu. 4th period. Mitsuyoshi Nakao [eE-0]   | Epigenetic medicine I__  |              |                           |
| 15  | 01/20  | Thu. 4th period. Mitsuyoshi Nakao [eE-0]   | Epigenetic medicine II   |              |                           |
| Required Textbook(テキスト)   | Textbooks are not specified, and handouts will be distributed.   |  |  |              |                           |
| Reading List(参考文献)  | <p>“Essential Developmental Biology” (3rd edition by Slack JMW.) Blackwell Publishing (2012)</p> <p>“C. ELEGANS II” (ed. D.L. Riddle, T. Blumenthal, B.J. Meyer, &amp; J.R. Priess) CSHL Press (1997)</p> <p>“EPIGENETICS” (edited by David Allis et al.) Cold Spring Harbor Laboratory Press (2007)</p>   |  |  |              |                           |
| Enrollment Conditions(履修条件)   |  |  |  |              |                           |

|  |  |
|--|--|
| Assessment Methods and Criteria(評価方法・基準)               | Grading will be based on the student's understanding of the course subject matter as well as participation in 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. |
| 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-)   | 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   | 2021 whole 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, Fukushima Satoshi, Sugawara Yasuhiko, Ishiguro Keiichiro, NAKAMURA Kimitoshi, Ito Takaaki, UEDA Mitsuharu, Jiyouno Hirofumi, Takizawa Hitoshi, Shindo Asako |              |                           |
| Goals with their ratio(学修成果とその割合)   |   |   |   |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・60% 2.学際的領域を理解できる深奥な教養力・・・25% 3.グローバルな視野と行動力・・・10% 4.地域社会を牽引するリーダー力・・・5% |   |   |   |              |                           |
| 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.(回数)   | Date(月日)  | Class Theme(授業テーマ)                            | Brief Outline of Class(内容概略)  |              |                           |
| 1   | 01/31   | 【1st grade】<br>4th period Hitoshi NIWA [eE-0] | Self-renewal of pluripotent stem cells  |              |                           |
| 2   | 02/07   | 4th period Hitoshi NIWA [eE-0]                | Differentiation of pluripotent stem cells   |              |                           |
| 3   | 02/14   | 4th period Takaaki ITO                        | Growth, differentiation and morphological abnormalities of epithelial cells   |              |                           |
| 4   | 02/21   | 4th period Kimitoshi NAKAMURA                 | Regenerative medicine for diseases of childhood   |              |                           |
| 5   | 02/28   | 4th period Asako SHINDO                       | Development and homeostasis of embryonic epithelial tissues   |              |                           |
| 6   | 01/27   | 【2nd grade】<br>4th period Mitsuharu UEDA      | Pathological analyses of hereditary amyloidosis   |              |                           |
| 7   | 02/03   | 4th period Hirofumi JONO                      | Development of treatment for hereditary amyloidosis   |              |                           |
| 8   | 02/10   | 4th period Satoshi FUKUSHIMA [eJ-0]           | Development and regeneration of skin (recovery of injury)   |              |                           |
| 9   | 02/17   | 4th period Hitoshi TAKIZAWA                   | Physiology of hematopoietic stem cell   |              |                           |
| 10  | 02/24   | 4th period Hitoshi TAKIZAWA                   | Pathophysiology of hematopoietic stem cell  |              |                           |
| 11  | 01/27   | 【3rd grade】<br>4th period Keiichiro ISHIGURO  | Chromosomal disorders in somatic and germ cells   |              |                           |
| 12  | 02/03   | 4th period Keiichiro ISHIGURO                 | Germ cells for regenerative medicine  |              |                           |
| 13  | 02/10   | 4th period Kimitoshi NAKAMURA                 | Pathological analysis and treatment of genetic diseases   |              |                           |
| 14  | 02/17   | 4th period Yoshihiko SUGAWARA                 | Present status and problems of organ transplants  |              |                           |
| 15  | 02/24   | 4th period Yoshihiko SUGAWARA                 | Liver grafts from brain-dead and living donor   |              |                           |
| 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 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 |
| 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  | 2021 whole 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, Awai Hirotake, Hibi Taizou |              |                           |
| Goals with their ratio(学修成果とその割合)  |   |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・25% 2.学際的領域を理解できる深奥な教養力・・・25% 3.グローバルな視野と行動力・・・25% 4.地域社会を牽引するリーダー力・・・25% |   |  |  |              |                           |
| 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  | 10/04   | Mon 4th period, Hiroyuki Oshiumi           | Structure and function of HLA class I                      |              |                           |
| 2  | 10/11   | Mon 4th period, Hiroyuki Oshiumi           | Structure and function of HLA class II                     |              |                           |
| 3  | 10/18   | Mon 4th period, Atsushi Irie               | Polymorphism of MHC and T cell- activation signals         |              |                           |
| 4  | 10/25   | Mon 4th period, Atsushi Irie               | Recognition of alloantigens by T cells                     |              |                           |
| 5  | 11/01   | Mon 4th period, Hiroyuki Oshiumi           | HLA and anti-tumor immunity                                |              |                           |
| 6  | 11/08   | Mon 4th period, Atsushi Irie               | Major and minor histocompatibility antigens                |              |                           |
| 7  | 11/15   | Mon 4th period, Atsushi Irie               | Immune response and dendritic cells                        |              |                           |
| 8  | 11/22   | Mon 4th period, Atsushi Irie               | Cytokine and Chemokine                                     |              |                           |
| 9  | 11/29   | Mon 4th period, Hiroyuki Oshiumi           | Graft versus Host reaction (GVHR)                          |              |                           |
| 10   | 12/06   | Mon 4th period, Hirotake Awai eE-0         | Immune tolerance   |              |                           |
| 11   | 12/13   | Mon 4th period, Hiroyuki Oshiumi,          | Host immune responses to xenografts                        |              |                           |
| 12   | 12/20   | Mon 4th period, Hiroyuki Oshiumi           | Transplantation immunology and Stem cell                   |              |                           |
| 13   | 12/27   | Mon 4th period, Hirotake Awai eE-0         | Immunosuppressant and transplantation                      |              |                           |
| 14   | 01/17   | Mon 4th period, Taizo Hibi                 | Transplantation in Japan and the world                     |              |                           |
| 15   | 01/24   | Mon 4th period, Taizo Hibi                 | Liver transplant from living donor                         |              |                           |
| Required Textbook(テキスト)  | Textbooks are not specified, and handouts will be distributed.  |  |  |              |                           |
| Reading List(参考文献)   | <ul style="list-style-type: none"> <li>・ "The Immune System" by Peter Parham. Garland Publishing Inc. New York and London, 2004</li> <li>・ "Janeway's Immunobiology Seventh Edition" by Kenneth Murphy, Paul Travers, Mark Walport. Garland Science, Taylor &amp; Francis Group LLC. New York and Abingdon, 2008.</li> <li>・ "A history of transplantation immunology" (Leslie Brent) Academic Press 1997</li> </ul>  |  |  |              |                           |
| 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   |  |  |              |                           |
| Course Based on Practical  | Not applicable  |  |  |              |                           |

Work Experience(実務経験  
を活かした授業)

Not applicable



| Course Coding(科目番号)   | 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   | 2021 whole 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)                                       |   |  |                                      |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・25% 2.学際的領域を理解できる深奥な教養力・・・50% 3.グローバルな視野と行動力・・・25% |   |  |                                      |              |                           |
| 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)   | <p>【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.</p> <p>【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.</p>  |  |                                      |              |                           |
| 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                |              |                           |
| Required Textbook(テキスト)   | Textbooks are not specified and handouts are provided.  |  |                                      |              |                           |
| Reading List(参考文献)  | <p>The Hastings Center. Bioethics Briefings (<a href="https://www.thehastingscenter.org/publications-resources/hastings-center-bioethics-briefings/">https://www.thehastingscenter.org/publications-resources/hastings-center-bioethics-briefings/</a>)<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</p> |  |                                      |              |                           |
| 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 presenting bioethical deliberation of their own themes, and so on. Grading will be based on the student's understanding of the course subjects.  |  |                                      |              |                           |
| Language Used in  | Japanese and English  |  |                                      |              |                           |

|  |  |
|--|--|
| Instruction(使用言語)                                      | 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  | 2021 whole 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.高度な専門的知識・技能及び研究力……30% 2.学際的領域を理解できる深奥な教養力……30% 3.グローバルな視野と行動力……20% 4.地域社会を牽引するリーダー力……20%   |  |  |                                  |              |                           |
| 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  |  | -----                                      | -----                            |              |                           |
| 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  | 2021 whole 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.高度な専門的知識・技能及び研究力・・・50% 2.学際的領域を理解できる深奥な教養力・・・30% 3.グローバルな視野と行動力・・・10% 4.地域社会を牽引するリーダー力・・・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  |  | -----                                      |                                  | -----                        |                           |
| 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  | 2021 whole 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.高度な専門的知識・技能及び研究力・・・30% 2.学際的領域を理解できる深奥な教養力・・・30% 3.グローバルな視野と行動力・・・20% 4.地域社会を牽引するリーダー力・・・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  |   | -----                                      | -----                            |              |                           |
| 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-)  | 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  | 2021 whole 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, NAKANISHI Hiroyuki, SOU Bunketsu, YAMANAKA Kunitoshi, NAKAO Mitsuyoshi, NISHINAKAMURA Ryuichi |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |   |   |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・50% 2.学際的領域を理解できる深奥な教養力・・・30% 3.グローバルな視野と行動力・・・10% 4.地域社会を牽引するリーダー力・・・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 summarized 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 field, 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)  | <p>【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.</p> <p>【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.</p>   |   |   |              |                           |
| Course Outline(授業の概要)  | <ul style="list-style-type: none"> <li>Scanning electron microscopy (Brain Morphogenesis)</li> <li>Time-lapse imaging of living culture cells (Molecular Pharmacology)</li> <li>Histological stain and its interpretation (Pathology and Experimental Medicine)</li> <li>Fractionation and isolation of cells by FACS (Cell Differentiation)</li> <li>Isolation of RNA/DNA and quantification by PCR (Medical Cell Biology)</li> <li>Operant conditioning test, Open field test, Fear-conditioning test (Molecular Physiology)</li> <li>Two-photon fluorescence microscopy for neurons (Sensory and Cognitive Physiology)</li> <li>Lipofection, Western blot (Kidney Development)</li> <li>Induction of protein expression in bacteria, protein purification (Molecular Cell Biology)</li> </ul> <p>In this course, sessions in Practical Training of Metabolism and Cardiovascular Medicine could also be selected.</p> |   |   |              |                           |
| 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.   |              |                           |
| 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-)  | 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  | 2021 whole 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, Kubota Ryuji, Okada Seiji, Oshiumi Hiroyuki, Matsui Hirotaka, Motozono Chihiro, Matsuoka Masao, Sawa Tomohiro, Maeda Yousuke, Suzu Shinya, Nakata Hirotomo, Ikeda Terumasa, Tanaka Yasuhito, Ikeda Masanori |              |                           |
| Goals with their ratio(学修成果とその割合)  |   |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力……30% 2.学際的領域を理解できる深奥な教養力……30% 3.グローバルな視野と行動力……20% 4.地域社会を牽引するリーダー力……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)  | <p>【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.</p> <p>【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</p> |  |  |              |                           |
| 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  | 05/31   | Terumasa Ikeda [eE-O]<br>16:45~18:15       | Retrovirus life cycle  |              |                           |
| 2  | 06/07   | Tomohiro Sawa [eE-O]<br>16:45~18:15        | Bacterial infection and pathogenesis   |              |                           |
| 3  | 06/14   | Hiroyuki Oshiumi [eE-O]<br>16:45~18:15     | Innate immune responses to pathogens   |              |                           |
| 4  | 06/21   | Chihiro Motozono [eE-O]<br>16:45~18:15     | Cellular immune responses to pathogens   |              |                           |
| 5  | 06/28   | Takeo Kuwata [eE-O]<br>16:45~18:15         | Humoral immune responses to pathogens  |              |                           |
| 6  | 07/05   | Yosuke Maeda [eE-O]<br>16:45~18:15         | Pathogenesis of Mycobacterium tuberculosis and HIV confection  |              |                           |
| 7  | 07/12   | Masao Matsuoka [eE-O]<br>16:45~18:15       | Emerging/re-emerging infectious diseases   |              |                           |
| 8  | 07/19   | Shinya Suzu [eE-O]<br>16:45~18:15          | Retroviruses-host interaction  |              |                           |
| 9  | 07/26   | Yorifumi Sato [eE-O]<br>16:45~18:15        | Retroviral infections and latency  |              |                           |
| 10   | 08/02   | Masanori Ikeda [eE-O]<br>16:45~18:15       | Molecular pathogenesis of hepatitis viruses  |              |                           |
| 11   | 08/23   | Yasuhito Tanaka [eE-O]<br>16:45~18:15      | Hepatitis viruses and Liver cancer   |              |                           |
| 12   | 08/30   | Ryuji Kubota [eE-O]<br>16:45~18:15         | Virus-induced neurological diseases  |              |                           |
| 13   | 09/06   | Seiji Okada [eE-O]<br>16:45~18:15          | Animal model research in infectious diseases   |              |                           |
| 14   | 09/13   | Hirotaka Matsui [eE-O]<br>16:45~18:15      | Roles of laboratory medicine for infectious diseases   |              |                           |



|  |  |  |                                    |
|--|--|--|------------------------------------|
| 15   | 09/27  | Hiroto mo Nakata [eE-O]<br>16:45~18:15 | Nosocomial/opportunistic infection |
| Required Textbook(テキスト)                                | Textbooks are not specified, and handouts will be distributed.   |  |                                    |
| Reading List(参考文献)                                     | <p>“Atlas of AIDS” edited by Gerald L. Mandell and Donna Mildvan. Current Medicine, Inc. Philadelphia, 2001.</p> <p>“Infectious Diseases and Medical Microbiology” 2nd Edition, Abraham I. Braude et al., W.B. Saunders Company</p>  |  |                                    |
| 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)  | 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   | 2021 whole 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  |              |                           |
| Goals with their ratio(学修成果とその割合)   |   |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・25% 2.学際的領域を理解できる深奥な教養力・・・35% 3.グローバルな視野と行動力・・・35% 4.地域社会を牽引するリーダー力・・・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)   | <p>【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.</p> <p>【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.</p> |  |  |              |                           |
| 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   |   | Naoki Ishizuka [eE-0]                      | Principles of medical statistics and epidemiology                |              |                           |
| 2   |   | Takamasa Ueno [eE-0]                       | Immune evasion by viruses  |              |                           |
| 3   |   | Shinichi Oka [eE-0]                        | Symptoms of HIV infection and AIDS                               |              |                           |
| 4   |   | Shinichi Oka [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  |   | Shuzo Matsushita [eE-0]                    | Overview in Clinical aspect of infectious diseases               |              |                           |
| 15  |   | Shuzo Matsushita [eE-0]                    | Natural course and diagnosis of infectious diseases              |              |                           |
| 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; <a href="http://AIDSinfo.nih.gov">http://AIDSinfo.nih.gov</a> . Atlas of AIDS 3rd edition; Current Medicine, Inc.,2001. (edited by G.L.Mandell and D.Mildvan.) Harrison' s principles of internal medicine 16th ed.  |  |  |              |                           |
| Enrollment Conditions(履修条件)   |   |  |  |              |                           |
| Assessment Methods and Criteria(評価方法・基準)  | 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 5 scores among ones obtained by the student.   |  |  |              |                           |
| Language Used in Instruction(使用言語)  | 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  | 2021 whole 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)         |   |   | Shinya Suzu, Matsuoka Masao                                     |              |                           |
| Goals with their ratio(学修成果とその割合)  |   |   |   |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・25% 2.学際的領域を理解できる深奥な教養力・・・40% 3.グローバルな視野と行動力・・・25% 4.地域社会を牽引するリーダー力・・・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 |              |                           |
| Required Textbook(テキスト)  |   |   |   |              |                           |
| Reading List(参考文献)   |   |   |   |              |                           |
| 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  | 2021 whole 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)       |   |   | Shinya Suzu, Oka Shinichi, Gatanaga Hiroyuki                    |              |                           |
| Goals with their ratio(学修成果とその割合)  |   |   |   |              |                           |
| 1.高度な専門的知識・技能及び研究力 ……25% 2.学際的領域を理解できる深奥な教養力 ……40% 3.グローバルな視野と行動力 ……25% 4.地域社会を牽引するリーダー力 ……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.(回数)  | 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 |              |                           |
| Required Textbook(テキスト)  |   |   |   |              |                           |
| Reading List(参考文献)   |   |   |   |              |                           |
| 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  | 2021 whole 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,  |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |   |   |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・40% 2.学際的領域を理解できる深奥な教養力・・・30% 3.グローバルな視野と行動力・・・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 |              |                           |
| 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)   | 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  | 2021 whole 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, UENO Takamasa   |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・30% 2.学際的領域を理解できる深奥な教養力・・・30% 3.グローバルな視野と行動力・・・30% 4.地域社会を牽引するリーダー力・・・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 related 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 techniques, 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 20th 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. |              |                           |
| Required Textbook(テキスト)  | Abstract book of Kumamoto AIDS seminar   |  |  |              |                           |
| 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 done by reports about presentation. The report contains abstract of the presentation, Q & A, and discussion. Students should submit the report within 2 weeks 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   | 2021 whole 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.高度な専門的知識・技能及び研究力・・・40% 2.学際的領域を理解できる深奥な教養力・・・30% 3.グローバルな視野と行動力・・・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 |              |                           |
| 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(科目番号)  | 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  | 2021 whole 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.高度な専門的知識・技能及び研究力 ……40% 2.学際的領域を理解できる深奥な教養力 ……40% 3.グローバルな視野と行動力 ……10% 4.地域社会を牽引するリーダー力 ……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 various 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         |              |                           |
| 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 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  | 2021 whole 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                            |              |                           |
| Goals with their ratio(学修成果とその割合)  |   |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・80% 3.グローバルな視野と行動力・・・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)  | <p>【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).</p> <p>【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).</p> |  |  |              |                           |
| 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 |              |                           |
| Required Textbook(テキスト)  |   |  |  |              |                           |
| Reading List(参考文献)   |   |  |  |              |                           |
| 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  | 2021 whole 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(special Research I on Infectious Diseases and AIDS) |  |  | UENO Takamasa                |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |  |                              |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・50% 3.グローバルな視野と行動力・・・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 |              |                           |
| 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)   | 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  | 2021 whole 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,               |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |   |                              |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・50% 3.グローバルな視野と行動力・・・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 |              |                           |
| 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)   | 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(科目番号)  | 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  | 2021 whole 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.高度な専門的知識・技能及び研究力 ……30% 2.学際的領域を理解できる深奥な教養力 ……30% 3.グローバルな視野と行動力 ……30% 4.地域社会を牽引するリーダー力 ……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, which will be discussed, must be summarized 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 field, 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 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)  | <p>Following methods and techniques are trained:</p> <ul style="list-style-type: none"> <li>· Introduction of epidemiology: Epidemiological and statistical analysis (Public Health)</li> <li>· Introduction of metabolic analysis: Method of analyzing metabolic disease (Molecular Laboratory Medicine)</li> <li>· Metabolic analysis 1: Analyzing intracellular signal transduction in response to metabolic changes (Cell Signaling and Metabolic Medicine)</li> <li>· Metabolic analysis 2: Measurements of insulin by ELISA (Medical Biochemistry)</li> <li>· Metabolic analysis 3: Whole body metabolism, CT (Molecular Genetics)</li> <li>· Metabolic analysis 4: Cardiovascular disease model (Cardiovascular Medicine)</li> <li>· Histological analysis: Histopathology, Immunohistochemistry (Cell Pathology)</li> <li>· Oxidative stress analysis: Measurements of reactive oxygen species (Microbiology)</li> </ul> <p>In this course, sessions in Practical training of Developmental Biology and Regenerative Medicine also could be selected.</p> |  |  |              |                           |
| Details for Individual Classes(各回の授業内容)  |   |  |  |              |                           |
| No.(回数)  | Date(月日)  | Class Theme(授業テーマ)                         | Brief Outline of Class(内容概略)   |              |                           |
| 1  | 09/29   | Introduction of epidemiology               | Epidemiological and statistical analysis (Public Health)   |              |                           |
| 2  | 11/19   | Introduction of metabolic analysis         | Method of analyzing metabolic disease (Molecular Laboratory Medicine)  |              |                           |
| 3  | 10/12   | Metabolic analysis 1                       | Analyzing intracellular signal transduction in response to metabolic changes(Cell Signaling and Metabolic Medicine)                  |              |                           |
| 4  | 10/01   | Metabolic analysis 2                       | Measurements of insulin by ELISA (Medical Biochemistry)  |              |                           |
| 5  | 10/28   | Metabolic analysis 3                       | Whole body metabolism, CT (Molecular Genetics)   |              |                           |
| 6  | 11/26   | Metabolic analysis 4                       | Cardiovascular disease model (Cardiovascular Medicine)   |              |                           |
| 7  | 10/21   | Histological analysis                      | Histopathology, Immunohistochemistry (Cell Pathology)  |              |                           |
| 8  | 11/12   | Oxidative stress analysis                  | Measurement of oxidative stress and inflammatory markers (Microbiology)  |              |                           |
| 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 discussion and the final report. In the report, results and comments concerning at least 8 sessions could 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) |
|---|---|--|---|--------------|---------------------------|
|   | 2021 whole 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, KATO Takahiko, MIURA Kyoko, TOMIZAWA Kazuhito, IWAMOTO Kazuya, YAMAGATA Kazuya, SOU Bunketsu, BABA Hideo, ONO Yusuke, ARAKI Eiichi, INOUE Toshihiro, TAKIZAWA Hitoshi |              |                           |
| Goals with their ratio(学修成果とその割合)   |   |  |   |              |                           |
| 1.高度な専門的知識・技能及び研究力……30% 2.学際的領域を理解できる深奥な教養力……40% 3.グローバルな視野と行動力……25% 4.地域社会を牽引するリーダー力……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 encouraged 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)   | <p>[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.</p> <p>[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.</p>  |  |   |              |                           |
| 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   | 10/08   | 4th MIURA Kyoko [eE-0]                     | The biology of aging  |              |                           |
| 2   | 10/15   | 4th YAMAGATA Kazuya [eE-0]                 | Regulation of glucose metabolism by insulin   |              |                           |
| 3   | 10/22   | 4th YAMAGATA Kazuya [eE-0]                 | Molecular mechanism of type 2 diabetes  |              |                           |
| 4   | 10/29   | 4th YAMAGATA Kazuya [eE-0]                 | Monogenic form of diabetes mellitus   |              |                           |
| 5   | 11/05   | 4th ARAKI Eiichi [eE-0]                    | To achieve healthy longevity -Learn about diabetic complications and their therapeutic approaches-  |              |                           |
| 6   | 11/12   | 4th BABA Hideo [eE-0]                      | Diagnosis and treatment for gastroenterological cancer  |              |                           |
| 7   | 11/19   | 4th MOROISHI Toshiro [eE-0]                | Cellular signaling pathways in aging and cancer   |              |                           |
| 8   | 11/26   | 4th TAKIZAWA Hitoshi [eE-0]                | Inflamm-aging of blood system   |              |                           |
| 9   | 12/03   | 4th TOMIZAWA Kazuhito [eE-0]               | RNA modifications and disease onset   |              |                           |
| 10  | 12/10   | 4th SONG Wen-Jie [eE-0]                    | Learning and memory   |              |                           |
| 11  | 12/17   | 4th IWAMOTO Kazuya [eE-0]                  | Aging-related epigenetic changes and psychiatric disorders  |              |                           |
| 12  | 12/24   | 4th INOUE Toshihiro [eE-0]                 | Glaucoma that threatens healthful longevity   |              |                           |
| 13  | 01/07   | 4th ONO Yusuke [eE-0]                      | Age-related changes in skeletal muscle and sarcopenia   |              |                           |
| 14  | 01/14   | 4th KATOH Takahiko [eE-0]                  | Concepts of social medicine   |              |                           |
| 15  | 01/21   | 4th KATOH Takahiko [eE-0]                  | Introduction to epidemiology  |              |                           |
| 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(履修条件)   |   |  |   |              |                           |
| Assessment Methods and Criteria(評価方法・基準)  |   |  |   |              |                           |



|  |                |
|--|----------------|
| 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)   | 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) |
|--|---|--|--|--------------|---------------------------|
| 2021-68-25800  | 2021 whole 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, TAKIZAWA Hitoshi, MOROISHI Toshiro, SADA Aiko, CHUJO Takeshi, FUJIMAKI Shin |              |                           |
| Goals with their ratio(学修成果とその割合)  |   |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力・・・35% 2.学際的領域を理解できる深奥な教養力・・・35% 3.グローバルな視野と行動力・・・20% 4.地域社会を牽引するリーダー力・・・10% |   |  |  |              |                           |
| Type of Class(授業の形態)   | Training  |  |  |              |                           |
| Teaching Method(授業の方法)   | All classes will be held remotely using Zoom. The instructor in charge will upload the paper to Moodle in advance. The student in charge of each class will give a presentation in a journal club-style using PowerPoint, and everyone should participate 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 the reports.<br>(In the first session, the content of the class and the presentation method will be explained.) |  |  |              |                           |
| 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 learn 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  | 10/08   | Tutorial 1                                 | Department of Aging and Longevity Research MIURA Kyoko<br>Introduction (How to make a presentation)  |              |                           |
| 2  | 10/15   | Tutorial 2                                 | Department of Aging and Longevity Research MIURA Kyoko<br>The longest-lived rodent, the naked mole rat   |              |                           |
| 3  | 10/22   | Tutorial 3                                 | Department of Medical Biochemistry YAMAGATA Kazuya   |              |                           |
| 4  | 10/29   | Tutorial 4                                 | Department of Molecular Genetics KADOMATSU Tsuyoshi<br>Altered energy metabolism and age-related diseases  |              |                           |
| 5  | 11/05   | Tutorial 5                                 | Department of Cell Pathology KOMOHARA Yoshihiro<br>Macrophage and cancer   |              |                           |
| 6  | 11/12   | Tutorial 6                                 | Department of Cell Signaling and Metabolic Medicine MOROISHI Toshiro   |              |                           |
| 7  | 11/26   | Tutorial 7                                 | Laboratory of Stem Cell Stress TAKIZAWA Hitoshi<br>Hematopoiesis under inflammatory stress   |              |                           |
| 8  | 12/03   | Tutorial 8                                 | Department of Molecular Physiology CHUJO Takeshi<br>RNA modification in health, disease, and COVID19 mRNA vaccine  |              |                           |
| 9  | 12/10   | Tutorial 9                                 | Department of Sensory and Cognitive Physiology SOU Bunketsu<br>Hearing and age-related hearing loss  |              |                           |
| 10   | 12/17   | Tutorial 10                                | Department of Molecular Brain Science IWAMOTO Kazuya<br>Aging and DNA methylation  |              |                           |
| 11   | 12/24   | Tutorial 11                                | Department of Muscle Development and Regeneration FUJIMAKI Shin<br>Towards overcoming sarcopenia   |              |                           |
| 12   | 01/07   | Tutorial 12                                | Division of Developmental Genetics ARAKI Kimi<br>Reserch using genetically modified mice   |              |                           |
| 13   | 01/14   | Tutorial 13                                | Department of Public Health Lu Xi<br>Public health and epidemiology  |              |                           |
| 14   | 01/21   | Tutorial 14                                | Laboratory of Skin Regeneration and Aging SADA Aiko<br>Stem cell dynamics in skin regeneration and aging   |              |                           |
| 15   |   | ----                                       | -----  |              |                           |
| Required Textbook(テキスト)  |   |  |  |              |                           |

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| Reading List(参考文献)                                     | The instructor for each session will upload the paper on Moodle.   |
| Enrollment Conditions(履修条件)                            |  |
| Assessment Methods and Criteria(評価方法・基準)               | Grades will be based on PowerPoint presentations (35 points) and reports (13 x 5 points = 65 points) from the 2nd to 14th classes. Submission of reports will count as attendance. If you are absent from class more than 5 times, you will fail the class. There will be no final exam. |
| 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(科目番号)  | 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  | 2021 whole year  | Graduate School of Medical Sciences(25850)                          | 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(A1 Medical Informatics and Medical Ethics)                    |  |   | Kadooka Yasuhiro, USUKU Koichiro, Kasaoka Shunji  |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |   |   |              |                           |
| 1.高度な専門的知識・技能及び研究力……25% 2.学際的領域を理解できる深奥な教養力……25% 3.グローバルな視野と行動力……25% 4.地域社会を牽引するリーダー力……25% |  |   |   |              |                           |
| 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. 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.(回数)  | Date(月日)   | Class Theme(授業テーマ)  | Brief Outline of Class(内容概略)  |              |                           |
| 1  | 05/31  | 6th period 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  | 06/07  | 6th period eAPRIN [eEJ-0]   | Data Handling_RCR / Rules for Collaborative Research_RCR /<br>Conflicts of Interest_RCR   |              |                           |
| 3  | 06/14  | 4th period eAPRIN [eEJ-0]   | Authorship_RCR / Plagiarism(Biomedical)_RCR /<br>Communicating Information to the Public_RCR  |              |                           |
| 4  | 06/21  | 4th period eAPRIN [eEJ-0]   | Peer Review(Biomedical)_RCR / Mentoring_RCR /<br>Managing Public Research Funds_RCR   |              |                           |
| 5  | 06/28  | 4th period 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  | 07/05  | 4th period 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  | 07/12  | 4th period eAPRIN [eEJ-0]   | Research Subjects Who Merit Special Considerations_HSR /<br>Records-Based Research_HSR / Social and Behavioral Research for Biomedical Researchers_HSR  |              |                           |
| 8  | 07/19  | 4th period 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  | 07/26  | 4th period 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   | 08/02  | 4th period Koichiro Usuku [eJ-0]                                    | Health care system in Japan and in the world  |              |                           |
| 11   | 08/23  | 4th period Shunji Koichiro Usuku [eEJ-0]                            | Future prospects of Electronic medical records, Clinical research and data ware hous  |              |                           |
| 12   | 08/30  | 4th period Shunji Kasaoka [eJ-0]                                    | Emergency Medical Service System, Post-Cardiac Arrest Syndrome  |              |                           |
| 13   | 09/06  | 4th period Shunji Kasaoka [eE-0] [eJ-0]                             | Disaster Medicine, Triage   |              |                           |
| 14   | 09/13  | 4th period Yasuhiro Kadooka   | Step up Lecture for Research Ethics (1)   |              |                           |
| 15   | 09/27  | 4th period Yasuhiro Kadooka   | Step up Lecture for Research Ethics (2)   |              |                           |
| Required Textbook(テキスト)  | Textbooks are not specified, and handouts will be distributed by the moodle system.  |   |   |              |                           |

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| 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) |
|--|--|--|--|--------------|---------------------------|
|  | 2021 whole 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()   |  |  | YAMAGATA Kazuya, BABA Hideo, Oike Yuuichi, Tsujita Kenichi |              |                           |
| Goals with their ratio(学修成果とその割合)  |  |  |  |              |                           |
| 1.高度な専門的知識・技能及び研究力……40% 2.学際的領域を理解できる深奥な教養力……30% 3.グローバルな視野と行動力……20% 4.地域社会を牽引するリーダー力……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)  | <p>【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.</p> <p>【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.</p>           |  |  |              |                           |
| 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.(回数)  | 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                       |              |                           |
| 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 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) |
|--|---|---|--|--------------|---------------------------|
|  | 2021 whole 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()   |   |   | YAMAGATA Kazuya, BABA Hideo, Oike Yuuichi, Tsujita Kenichi |              |                           |
| Goals with their ratio(学修成果とその割合)  |   |   |  |              |                           |
| 1.高度な専門的知識・技能及び研究力……40% 2.学際的領域を理解できる深奥な教養力……30% 3.グローバルな視野と行動力……20% 4.地域社会を牽引するリーダー力……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.              |              |                           |
| 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)   | (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) |
|--|---|---|--|--------------|---------------------------|
|  | 2021 whole 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()  |   |   | YAMAGATA Kazuya, BABA Hideo, Oike Yuuichi, Tsujita Kenichi |              |                           |
| Goals with their ratio(学修成果とその割合)  |   |   |  |              |                           |
| 1.高度な専門的知識・技能及び研究力……40% 2.学際的領域を理解できる深奥な教養力……30% 3.グローバルな視野と行動力……20% 4.地域社会を牽引するリーダー力……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          |              |                           |
| 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)   | (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) |
|  | 2021 whole 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()   |   |   | YAMAGATA Kazuya, BABA Hideo, Oike Yuuichi, Tsujita Kenichi |              |                           |
| Goals with their ratio(学修成果とその割合)  |   |   |  |              |                           |
| 1.高度な専門的知識・技能及び研究力……40% 2.学際的領域を理解できる深奥な教養力……30% 3.グローバルな視野と行動力……20% 4.地域社会を牽引するリーダー力……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              |              |                           |
| 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)   | 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  |   |  |              |                           |