

**Nagasaki University Priority Graduate Programs (NUPGP)
for Foreign Students in Biomedical Sciences
(Master Course)**

Syllabus

April, 2015 ~ March, 2016

Nagasaki University Graduate School of Biomedical Sciences

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Academic year 2015 the first semester	Day·Period MON, 2	Required/Elective class elective	Number of credits 1.0
Subject Molecular Biology of Neurodegenerative Diseases II			
Time schedule code 20155503151157	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical School 2nd floor seminar room or Laboratory of Gene-based Drug Discovery, Student room		
Professor / E-mail address / Laboratory / Tel/ Office hours Nobuhisa Iwata / iwata-n@nagasaki-u.ac.jp / Gene-based Drug Discovery / 095-819-2435 / Mon-Fri. 13:00-17:00			
Professor(s)	Nobuhisa Iwata, Keiro Shirotani, Masashi Asai		
Aim/ Goal/Method/ Aim/ Better understanding of molecular mechanisms of dementia and neurodegenerative diseases in addition to their clinical symptom and pathological features is requisite for development of more effective and safer medication. This class focuses on dementia and neurodegenerative diseases, such as Alzheimer's disease, and provides you with detailed molecular mechanisms and recent topics of the disease researches. A common keyword to the diseases is "proteases", which play critical roles in the disease onsets and developments. At the end of this class, you will be aware that down-regulation or up-regulation of the proteases responsible for metabolism of pathogenic peptides would be promising avenues for medication. This class also provides much knowledge and information how we can utilize biotechnological techniques for development of new drugs. Goal/ To understand and to be able to summarize molecular mechanisms of the diseases and potential of biotechnology against the diseases. Method/ Lecture using PC-based slide-show presentation and printed materials.			
Class outline/Contents Basics of enzymology, such as classification of enzymes, pathophysiological functions of some enzymes, t in addition to the clinical symptoms, the pathological features and molecular mechanisms of the diseases, will be reviewed. The lecture also includes essences to understand future drug developments and early diagnostic method based on the genomic drug discovery concept, and proteomic analysis. 1st: The clinical symptoms and the pathological features of neurodegenerative diseases [Iwata] 2nd: The causal genes responsible for Alzheimer's disease pathogenesis and their functions [Shirotani] 3rd: Molecular mechanism of the pathogenesis of Alzheimer's disease (1) [Iwata] 4th: Molecular mechanism of the pathogenesis of Alzheimer's disease (2) [Iwata] 5th: In vivo analysis of pathogenic mechanism of Alzheimer's disease using animal models (1) [Iwata] 6th: In vivo analysis of pathogenic mechanism of Alzheimer's disease using animal models (2) [Iwata] 7th: Current status of biomarkers and disease-modifying drugs for Alzheimer's disease [Shirotani] 8th: Recent advances of Alzheimer's disease research [Asai]			
Key words	dementia, neurodegenerative diseases, Alzheimer's disease, neuropathologies, animal models, proteases, drug discovery, clinical biomarker		
Textbook, Teaching material, and Reference book	A handout of selected PowerPoint slides used in each lecture		
Evaluation	Active participation 40%, brief examination after the class 30% and report 30%		
Requirements	To whom take this class must have fundamental knowledge on neurobiology and molecular biology.		
Remarks(URL)	http://www.alzforum.org/		
Message for students	In most cases this research field is different from yours, but I hope you learn how to go ahead with disease researches.		

Academic year 2015	Day・Period MON2	Required/Elective class elective	Number of credits 1.0
Subject Analytical Chemistry in Health and Environmental Sciences II			
Time schedule code 20155503101063	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical School 5th floor refresh room		
Professor / E-mail address / Laboratory / Tel/ Office hours Naotaka Kuroda / n-kuro@nagasaki-u.ac.jp / Analytical Chemistry / 095-819-2894 / Mon.～Fri. 13:30-17:00			
Professor(s)	Naotaka Kuroda, Naoya Kishikawa		
Aim/ Goal/Method/ Aim/ Understanding of (1) the concepts and principles underlying the chromatographic, electrophoretic and other separation techniques used in analytical procedures, and (2) their typical application to biomedical and environmental analysis. Method/ For the lecture, audio-visual equipments will be employed for a better understanding. Goal/ 1) Learn and understand the theories on which the principles of various analytical techniques are based, and 2) become familiar with the important details of specific methods for biomedical analysis.			
Class outline/Contents Class outline/ Study of the fundamental principles of separation techniques for biomedical and environmental analysis, and their applications. 1st: June 8, Introduction to separation techniques for biomedical and environmental analysis (Kuroda) 2nd: June 15, Basics of analytical separations (Kuroda) 3rd: June 22, Basics and applications of liquid chromatography (Kishikawa) 4th: June 29, Latest technologies of liquid chromatography (Kishikawa) 5th: July 6, Basics and applications of capillary electrophoresis and capillary electrochromatography (Kuroda) 6th: July 13, Application of analytical separations to environmental analysis (Kishikawa) 7th: July 27, Application of analytical separations to biomedical analysis (2) (Kishikawa) 8th: August 3, General overview and preparing of a report (Kuroda)			
Key word	HPLC, CE, CEC, FIA, SIA		
Textbook, Teaching material, and Reference book	Reference Book: Handbook of Analytical Separations, Vol. 4, Bioanalytical Separations, Edited by Ian D. Wilson 2003, Elsevier, Modern Derivatization Methods for Separation Sciences, Edited by T. Toyo'oka, 1999, John Wiley & Sons Ltd.		
Evaluation	Your performance will be evaluated by active participation (30%) and reports (70%). Students whose unexcused absences exceed 30% of the class will receive an automatic D for the course.		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 the first semester	Day•Period TUE3	Required/Elective class elective	Number of credits 1.0
Subject Bioorganic Chemistry for Environmental Science II			
Time schedule code 20155503121051	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical School 3rd floor seminar room		
Professor / E-mail address / Laboratory / Tel/ Office hours Masakazu Tanaka / matanaka@nagasaki-u.ac.jp / Pharmaceutical Chemistry / 095-819-2423 / Tuesday 16:00-18:00			
Professor(s)	Masakazu Tanaka, Makoto Oba		
Aim/ Goal/Method/ Aim/ To provide the students with fundamental knowledge of principles and methods in bioorganic chemistry. Method/ Lecture using PowerPoint slides and printed documents. Goal/ To understand the three-dimensional structures of bioorganic molecules (small molecules, oligopeptides, and nano-molecules), how the weak interactions can be harnessed to program complex molecular behaviors, and method how to design and synthesize bioorganic molecules and biomaterials.			
Class outline/Contents This course will cover amino acids, peptides, and the structures of foldamers as bioorganic molecules, and deal with their secondary structures and their functions. Also, the course will cover the basic issues of non-covalent interactions, reversible bindings, nanotechnology, biomaterials, and molecular design. 1st: Introduction: natural amino acids and peptides [M. Tanaka] 2nd: Non-proteinogenic amino acids and their peptides, and their secondary structures [M. Tanaka] 3rd: Foldamers, and α,α -disubstituted amino acids [M. Tanaka] 4th: Chiral cyclic amino acids and their peptides [M. Tanaka] 5th: Design of chiral peptide catalysts [M. Tanaka] 6th: Nanotechnology and biomaterials [Oba] 7th: Nanomedicine and NanoDDS [Oba] 8th: Gene therapy by nanotechnology [Oba]			
Key word	amino acid, oligomer, secondary structure, molecular recognition, catalysis, nanomedicine, nanotechnology, biomaterials		
Textbook, Teaching material, and Reference book	PowerPoint slides and Printed documents		
Evaluation	Contribution in group discussion (50%), and completion of assignments (50%)		
Requirements	None		
Remarks(URL)			
Message for students	The three-dimensional structures of molecules and biomaterials are important for drug design.		

Academic year 2014 the first semester	Day・Period WED2	Required/Elective class elective	Number of credits 1.0
Subject Pharmacology and Drug Discovery II (Pharmacology of Pain and Drug Abuse II)			
Time schedule code 20155503172153	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical School 4th floor seminar room		
Professor / E-mail address / Laboratory / Tel/ Office hours Hiroshi Ueda / ueda@nagasaki-u.ac.jp / Pharmacology and Therapeutic Innovation / 095-819-2421 / Wed.12:00-12:50 (Accept any question by e-mail)			
Professor(s)	Hiroshi Ueda, Tamotsu Tsukahara		
Aim/ Goal/Method/ Aim/ To teach the mechanism of acute and chronic pain / To teach the new approaches of drug discovery against some topics Goal/ To understand and to be able to summarize the mechanisms underlying pain and the therapeutic innovation in drug discovery Method/ Lecture using power-point slides and printed documents			
Class outline/Contents Pain and opioid actions are an important topic in terms of social issues and basic science. The study of mechanisms underlying development of chronic pain, such as cancer pain, and opioid tolerance following chronic treatments leads to a better understanding of neuronal plasticity, which is one of most important topics in neuroscience as well as memory and learning. The scope of therapeutic innovation reaches beyond the focus of pharmaceuticals, and its research and development, to include innovations in drugs, devices, and diagnostics, as well as global regulatory issues. 1st: Mechanisms of acute and chronic pain (Ueda) 2nd: Epigenomic regulation of chronic pain-related genes (Ueda) 3rd: Lipid mediators as key molecules for chronic pain (Ueda) 4th: Recent topics on neurogenesis (Ueda) 5th: New approaches for the drug discovery against stroke (Tsukahara) 6th: New approaches for the drug discovery against infectious diseases (Tsukahara) 7th: New approaches for the drug discovery against cancer (Tsukahara) 8th: Introduction of medicinal chemistry (Tsukahara)			
Key word	Chronic pain, Stroke, Infectious disease, Cancer, Medicinal chemistry		
Textbook, Teaching material, and Reference book	None		
Evaluation	Active commitment (50%) to the lecture and examination (50%) on each topic		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 the first semester	Day・Period FRI2	Required/Elective class elective	Number of credits 1.0
Subject Natural Product Chemistry for Infectious Diseases II			
Time schedule code 20155503161056	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical School 3rd floor seminar room		
Professor / E-mail address / Laboratory / Tel/ Office hours Takashi Tanaka / t-tanaka@nagasaki-u.ac.jp / Natural Product Chemistry / 2432 / Any time (Please make appointment by E-mail)			
Professor(s)	Takashi Tanaka, Yoshinori Saito, Yosuke Matsuo		
Aim/ Goal/Method/ Aim/ The aim of the lecture is to understand classification of natural products by their biosynthesis pathway. In addition, methods used for separation, structure elucidation, and application to functional materials will be introduced. Goal/ 1) Acquire knowledge of the classification the natural products by their molecular structures and biosynthesis. 2) Acquire knowledge of the functions of important natural products and their application. 3) Acquire knowledge of the methodology used in natural product chemistry. Method/ Lecture (with Power Point presentation)			
Class outline/Contents Natural organic compounds produced by plants and microorganisms are important source of medicines. Many modern medicines are originated from seed compounds isolated from living things, and many crude drugs, such as herbs and traditional medicines, are still widely used in contemporary medicine. This class aimed to understand the chemistry of natural products and techniques used for separation and identification of compounds.. 1st: Biosynthetic pathway for Natural compounds(1) 2nd: Biosynthetic pathway for Natural compounds(2) 3rd: Separation of Natural Products and structure determination by spectroscopic and chemical method(1) 4th: Separation of Natural Products and structure determination by spectroscopic and chemical method(2) 5th: Plant polyphenols and application to functional foods 6th: Biomimetic reactions of plant polyphenols 7th: Chemistry of color 8th: Physicochemical properties of tannins and chemical ecology			
Key word	Biosynthesis, structure determination, chromatography, NMR		
Textbook, Teaching material, and Reference book	No text book, Reference: Medicinal Natural Products (Dewick)		
Evaluation	report(20%), exercise(80%)		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 the first semester	Day·Period FRI2	Required/Elective class elective	Number of credits 1.0
Subject Molecular Biology of Infectious Agents I			
Time schedule code 20155503150058	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical School 2nd floor seminar room		
Professor / E-mail address / Laboratory / Tel/ Office hours Kaio Kitazato / kkholi@nagasaki-u.ac.jp / Molecular Pharmacology of Infectious Agents / 819-2457 / Any time but need appointment			
Professor(s)	Kaio Kitazato		
Aim/ Goal/Method/ Aim/ To teach the topics of emerging infectious diseases Goal/ To understand and to be able to summarize the emerging infectious diseases Method/ Lecture and seminar using PowerPoint slides or printed documents			
Class outline/Contents Class outline/ Emerging infectious diseases are an important topics in terms of social issues and science. The study of replication of infectious agents and their interaction with host factors leads to a better understanding of infectious diseases and to help to develop new drugs of anti-infectious agents. 1st: Social problems of emerging infectious diseases 2nd: Characterization of infectious agents 3rd: Molecular therapy of Infectious agents 4th: Molecular mechanism of replication of infectious agents 5th: Strategy for drug development of anti-infectious agents 6th: Strategy for vaccine development of infectious agents 7th: Application of virus as vectors on human gene therapy			
Key word	virus, replication, vaccine, anti-viral drug, gene therapy		
Textbook, Teaching material, and Reference book	None		
Evaluation	Report		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 the second semester	Day·Period TUE3	Required/Elective class elective	Number of credits 1.0
Subject Inorganic Chemistry in Health and Environmental Sciences I			
Time schedule code 20155503140062	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Master course	Classroom Refresh room in the 5th floor for faculty of Pharmaceutical Sciences		
Professor / E-mail address / Laboratory / Tel/ Office hours Morio Nakayama / morio@nagasaki-u.ac.jp / Hygienic Chemistry / 095-819-2441 / Monday – Friday 0:20 – 0:50 p.m. or by appointment			
Professor(s)	Morio Nakayama, Koyo Nishida, Shintaro Fumoto, Takeshi Fuchigami		
Aim/ Goal/Method/ Aim/ The aims of this subject are a) to be aware of what metal and metalloid elements are important in biology and medicine, and b) to give you state-of-the-art knowledge of the biological inorganic chemistry and nuclear medicine. Goal/ The goals of this subject are a) a broad understanding of metal and metalloid elements in biological systems and medicine, b) to understand what essential trace elements are and explain the biological functions of essential trace elements with showing an example, and c) to understand what radiopharmaceuticals are and explain one of their applications in medicine. Method/ PowerPoint slides, Video, Printed matters (Scientific magazines, Newspapers, etc)			
Class outline/Contents This is an advanced class on biological inorganic chemistry with emphasis to biologically important and medically useful metal and metalloid elements. Issues of particular interest are biological functions of essential trace elements, such as iron, zinc, copper, selenium, etc., and the concept of metal-containing radiopharmaceuticals for diagnosis. This lecture is not intended to describe or explain everything you will learn in the biological inorganic chemistry; rather, it will indicate important topics to study and will give you an opportunity to think about these topics. 1st: Overview: Metal and Metalloid Elements in Biology, Medicine and Environment (Nakayama) 2nd: Radiopharmaceuticals in Nuclear Medicine (I) (Nakayama) 3rd: Radiopharmaceuticals in Nuclear Medicine (II) (Fuchigami) 4th: Essential Trace Elements in Biological Systems (I) (Nakayama) 5th: Essential Trace Elements in Biological Systems (II) (Fuchigami) 6th: Drug Delivery Systems (Nishida and Fumoto) 7th: Drug Delivery Systems (Nishida and Fumoto) 8th: Review			
Key word	Metal, Metalloid, Essential element, Radiopharmaceutical, Nuclear Medicine, Diagnosis, DDS		
Textbook, Teaching material, and Reference book	Textbook, Teaching Material, and Reference Book / Textbook and reference materials are not specified.		
Evaluation	Grading will be based on midterm and/or final exam (80%) and report (20%). (NOTICE : On-time regular attendance is required throughout the class.)		
Requirements	Nothing		
Remarks(URL)	http://www.ph.nagasaki-u.ac.jp/lab/hygiene/index-e.html		
Message for students	Basically, the instructors will give handouts of selected PowerPoint slides to be used in each lecture out to the attendees.		

Academic year 2015 the second semester	Day・Period WED3	Required/Elective class elective	Number of credits 1.0
Subject Synthesis of Drugs for Infectious Diseases I			
Time schedule code 20155503190055	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical School 3rd floor seminar room		
Professor / E-mail address / Laboratory / Tel/ Office hours Osamu Onomura / onomura@nagasaki-u.ac.jp / Synthetic Chemistry for Pharmaceuticals / 095-819-2429 / Mon. - Fri. 10:30 - 18:00			
Professor(s)	Osamu Onomura, Masami Kuriyama		
Aim/ Goal/Method/ Aim/ You learn systematically selective reactions which synthesize complicated organic molecules and are necessary for development of new drugs for infectious diseases. Professional education Goal/ (1) You can explain representative asymmetric reactions. (2) You can get practical knowledge necessary for invention of new drugs. Method/ Lectures concerning about development of new synthetic methods, which are extracted from new literatures and patents, are given by utilizing prints and slide-projector. Exercises are timely carried out.			
Class outline/Contents You can learn highly selective reactions for development of new drugs, for examples, selective organic synthesis utilizing the characteristics of nitrogen, synthesis of optically active cyclic amino compounds, and so on. 1st: 7th, Oct Selective organic synthesis utilizing the characteristics of nitrogen I (Onomura) 2nd: 14th, Oct Selective organic synthesis utilizing the characteristics of nitrogen II (Onomura) 3rd: 21st, Oct Selective organic synthesis utilizing the characteristics of nitrogen III (Onomura) 4th: 28th, Oct Synthesis of optically active cyclic amino compounds (Onomura) 5th: 4th, Nov Selective organic synthesis utilizing the characteristics of silicon (Kuriyama) 6th: 11th, Nov Selective organic synthesis utilizing the characteristics of borone (Kuriyama) 7th: 18th, Nov Selective organic synthesis utilizing the characteristics of fluorine (Kuriyama) 8th: 25th, Nov Synthesis of sugars (Kuriyama)			
Key word	None		
Textbook, Teaching material, and Reference book	Documents prepared from recent literatures are distributed.		
Evaluation	Exercise (30%), Test (30%), Report (40%)		
Requirements	None		
Remarks(URL)			
Message for students	In advance, master basic knowledge of organic chemistry.		

Academic year 2015 the second semester	Day·Period THU2	Required/Elective class elective	Number of credits 1.0
Subject Cell Biology for Health Science I			
Time schedule code 20155503130052	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical School 4th floor seminar room		
Professor / E-mail address / Laboratory / Tel/ Office hours Kohsuke Takeda / takeda-k@nagasaki-u.ac.jp / Cell Regulation / 095-819-2417 / 13:00~17:00			
Professor(s)	Kohsuke Takeda, Kei-ichi Ozaki, Susumu Tanimura		
Aim/ Goal/Method/ Aim/ To learn the mechanisms and significance of intracellular signal transduction regulating various cellular functions. Goal/ To understand the mechanisms of intracellular signal transduction and their dysregulation in various diseases. Method/ Lecture using PowerPoint slides and printed documents.			
Class outline/Contents Regarding the following respective topics, latest research achievements and perspectives, as well as basic findings, will be provided. 1st: Oct 1: Overview [Takeda] 2nd: Oct 8: Mechanisms of signal transduction [Takeda] 3rd: Oct 15: Molecular bases of resolution of inflammation [Takeda] 4th: Oct 22: Regulation of cell size [Takeda] 5th: Oct 29: Epigenetic regulation of neural stem cells (1) [Takeda] 6th: Nov 5: Epigenetic regulation of neural stem cells (2) [Takeda] 7th: Nov 12: Regulation of cell motility [Tanimura] 8th: Nov 19: Cell signaling and metabolism [Ozaki]			
Key word	signal transduction, cell motility, stress response, cancer, inflammation, metabolism, mitochondria		
Textbook, Teaching material, and Reference book	Reference book: Molecular Biology of the Cell 5th Edition		
Evaluation	Attendance (40%), Report (60%)		
Requirements	Those who take this class must have fundamental knowledge on cell biology and molecular biology.		
Remarks(URL)			
Message for students			

Academic year 2015 the second semester	Day·Period THU2	Required/Elective class elective	Number of credits 1.0
Subject Chemistry of Biofunctional Molecules for Infectious Diseases I			
Time schedule code 20155503132061	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Masrer course	Classroom Pharmaceutical School 4th floor seminar room		
Professor / E-mail address / Laboratory / Tel/ Office hours Masaaki Kai / ms-kai@nagasaki-u.ac.jp / Chemistry of Biofunctional Molecules / 095-819-2438 / 12:00-18:00			
Professor(s)	Masaaki Kai, Tsutomu Kabashima, Takayuki Shibata		
Aim/ Goal/Method/ Aim/ To study and discuss about scientific technology for functional analysis of proteins and nucleic acids. Goal/ To understand about scientific technology for analysis of proteins and nucleic acids and their function. Method/ Lecture and discussion using printed matters, computer slides and scientific journals.			
Class outline/Contents Study on analytical technology and bio-function of biogenetic macromolecules. 1st. Nov. 26 Functional outline and detection techniques of biogenic proteins [Kabashima] 2nd. Dec. 3 Analytical technology of proteins and its applications (1) [Kabashima] 3rd. Dec. 10 Analytical technology of proteins and its applications (2) [Kabashima] 4th. Dec. 17 Functional outline and modification techniques of biogenic nucleic acids [Shibata] 5th. Dec. 24 Analytical technology of nucleic acids and its applications (1) [Shibata] 6th. Jan. 7 Analytical technology of nucleic acids and its applications (2) [Shibata] 7th. Jan. 14 Nucleic acid and protein analyses on infectious diseases [Kai] 8th. Jan. 28 Discussion of lecture [Kai]			
Key word	Proteins, Nucleic acids, Drugs		
Textbook, Teaching material, and Reference book	Scientific journals, Printed matters		
Evaluation	Report (50%), Aggressiveness (50%)		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 the second semester	Day·Period FRI2	Required/Elective class elective	Number of credits 1.0
Subject Pharmaceutical Organic Chemistry for Infectious Diseases I			
Time schedule code 20155503170054	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical School 3rd floor seminar room		
Professor / E-mail address / Laboratory / Tel/ Office hours Susumi Hatakeyama / susumi@nagasaki-u.ac.jp, jishi@nagasaki-u.ac.jp / Pharmaceutical Organic Chemistry / 095-819-2426 / Mon.-Fri. 13:00-18:00			
Professor(s)	Susumi Hatakeyama, Jun Ishihara		
Aim/ Goal/Method/ Aim/ The synthesis of natural products is a very important research field of drug discovery. In this class, the students will learn the synthesis of natural products possess useful biological activities for developing drugs for the treatment of infectious diseases. Goal/ 1) An understanding of synthetic plans and strategies. 2) An understanding of synthetic reactions. 3) An understanding of synthetic routes. Method/ Lecture using Power Point slides and printed documents.			
Class outline/Contents This class provides several representative drug candidates for the infectious diseases as examples in order for the students to understand how to 1st: Drug candidates and their syntheses (1) (Ishihara) 2nd: Drug candidates and their syntheses (2) (Ishihara) 3rd: Drug candidates and their syntheses (3) (Ishihara) 4th: Drug candidates and their syntheses (4) (Ishihara) 5th: Drug candidates and their syntheses (5) (Hatakeyama) 6th: Drug candidates and their syntheses (6) (Hatakeyama) 7th: Drug candidates and their syntheses (7) (Hatakeyama) 8th: Drug candidates and their syntheses (8) (Hatakeyama)			
Key word	None		
Textbook, Teaching material, and Reference book	Journals (JACS, JOC, OL, TL, Angew. Chem. Int. Ed., Chem. Commun, etc.)		
Evaluation	enthusiastic attitude (30%) and report (70%)		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 the second semester	Day·Period FRI2	Required/Elective class elective	Number of credits 0.5
Subject Resources of Marine Natural Medicines for Infectious Diseases			
Time schedule code 20155503180059	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Master course	Classroom Medical Plants Garden 2nd floor seminar room		
Professor / E-mail address / Laboratory / Tel/ Office hours Koji Yamada / kyamada@nagasaki-u.ac.jp / Medicinal Plant Biochemistry / 095-819-2462 / Monday 13:00-14:00			
Professor(s)	Koji Yamada		
Aim/ Goal/Method/ Aim/ To teach the marine natural medicines for infectious diseases Goal/ To understand and to be able to summarize underlying marine natural medicines Method/ Lecture using power point slides and printed documents			
Class outline/Contents Class outline/ The marine environment has proven to be a very rich source of extremely potent compounds that have demonstrated significant activities in antimicrobial, antitumor, anti-inflammatory, analgesia, immunomodulation, allergy, and anti-viral assay. There are now significant numbers of very interesting molecules that have come from marine sources, or have been synthesized as a result of knowledge gained from a prototypical compounds, that are either in or approaching Phase II/III clinical trials in infectious, cancer, analgesia, allergy, and cognitive diseases. A substantial number of other potential agents are following in their wake in preclinical trials in these and in other diseases. In this lecture, it introduces mainly the latest research on the marine organism, and they are reviewed from the aspect of the medicine resource. 1st: The possibilities of marine organisms for the medicinal sources (Yamada) 2nd: Materials for development of the medicine I Antimicrobial and anticancer drugs in clinical and preclinical trials (Yamada) 3rd: Materials for development of the medicine II Antiplasmodial marine natural products (Yamada) 4th: pharmacological studies (Yamada)			
Key word	Marine Natural Products, antimicrobial, antitumor, anti-inflammatory, analgesia, immunomodulation, allergy, anti-viral, antiplasmodial agents		
Textbook, Teaching material, and Reference book	none		
Evaluation	The achievement level of the above-mentioned target is evaluated by following standards. Report (80%) and Approach attitude to the problem of class (20%)		
Requirements	It is desirable to have learned the foundation of organic chemistry.		
Remarks(URL)			
Message for students	Since this lecture is based on marine natural products chemistry, to often review is required. The newest literature of a related field is read.		

Academic year 2015 the second semester	Day・Period FRI2	Required/Elective class elective	Number of credits 0.5
Subject Resources of Natural Medicines for Infectious Diseases			
Time schedule code 20155503181060	Student year(s) 1st, 2nd	Class description Lecture	Class type NUPGP
Object Student Master course	Classroom The 1st Lecture Room		
Professor / E-mail address / Laboratory / Tel/ Office hours Toshihide Maki / maki@nagasaki-u.ac.jp / Structure Analysis for Chemicals / 095-819-2465 / Mon. - Fri. 12:00 - 13:00			
担当教員 (オムニバス科目等)			
Aim/ Goal/Method/ Aim/ You will learn basic of nuclear magnetic resonance spectrometer and mass spectrometer which are essential instruments for structure analysis for chemicals including infectious diseases. Goal/ The ability to explain basic of NMR and Mass spectrometer. The ability to select rational instruments for structure analysis of target molecules. Method/ Educational training for structure analysis of chemicals, searching of chemicals, related to infectious diseases.			
Class outline/Contents Almost all medical supplies are low molecule organic compounds. In order to advance drug design and search research, it becomes skilled about a means to get to know the structure of a molecule exactly, and the capability to consider a molecule function based on a rational molecular structure model is searched for. You learn about the basic principle of a nuclear-magnetic-resonance (NMR) method and mass spectrometry and application which are an indispensable measuring method, in order to conduct the structural analysis of a low molecule organic compound. 1st: Basic of nuclear magnetic resonance spectrometer with vector model. 2nd: Advanced techniques of nuclear magnetic resonance spectrometer with vector model. 3rd: Basic of mass spectrometer: ionization methods and fragmentation pattern. 4th: Discussion about practical problems in structural analysis of chemicals.			
Key word	nuclear magnetic resonance, mass spectrometry, chemistry, structure		
Textbook, Teaching material, and Reference book	Reference books: High-Resolution NMR Techniques in Organic Chemistry, Understanding mass spectra, etc.		
Evaluation	Report (60%) and discussion (40%) in the class		
Requirements	None		
Remarks(URL)			
Message for students	LACS may be used for distribution of documents and announcement about this class.		

Academic year 2015 full year	Day・Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Cell Regulation]			
Time schedule code 201555082000K1	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Cell Regulation		
Professor / E-mail address / Laboratory / Tel/ Office hours Kohsuke Takeda / takeda-k@nagasaki-u.ac.jp / Cell Regulation / 095-819-2417 / 13:00~17:00			
Professor(s)	Kohsuke Takeda, Kei-ichi Ozaki, SusumuTanimura		
Aim/ Goal/Method/ Aim/ To learn the approaches to elucidate the mechanisms of intracellular signal transduction regulating various cellular functions. Goal/ To understand research articles in English and to acquire how to present and discuss scientific data. Method/ Seminar			
Class outline/Contents Present and discuss selected research articles on the following subject. 1. Novel mechanisms and significance of intracellular signaling. 2. Signal transduction regulating cellular stress response. 3. Cell signaling and various diseases. 4. Mitochondrial functions in cell signaling.			
Key word	signal transduction, cell signaling, stress response, cancer, metabolism, mitochondria		
Textbook, Teaching material, and Reference book	Scientific journals		
Evaluation	Presentation and discussion skills.		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 full year	Day・Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Cell Regulation]			
Time schedule code 201555082010M1	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Cell Regulation		
Professor / E-mail address / Laboratory / Tel/ Office hours Kohsuke Takeda / takeda-k@nagasaki-u.ac.jp / Cell Regulation / 095-819-2417 / 13:00~17:00			
Professor(s)	Kohsuke Takeda, Kei-ichi Ozaki, Susumu Tanimura		
Aim/ Goal/Method/ Aim/ To learn the approaches to elucidate the mechanisms of intracellular signal transduction regulating various cellular functions. Goal/ To plan and perform appropriate experiments independently to obtain data for publication in scientific journals. Method/ Experiments			
Class outline/Contents Plan and perform experiments for each research project and discuss the resulting data with instructors and laboratory members.			
Key word	signal transduction, cell signaling, stress response, cancer, metabolism, mitochondria		
Textbook, Teaching material, and Reference book	None		
Evaluation	Technical and scientific achievements.		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Pharmacology and Therapeutic Innovation]			
Time schedule code 201555082000K3	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Pharmacology and Therapeutic Innovation		
Professor / E-mail address / Laboratory / Tel/ Office hours Hiroshi Ueda / ueda@nagasaki-u.ac.jp / Pharmacology and Therapeutic Innovation / 095-819-2421 / Wed.12:00-12:50 (Accept any question by e-mail)			
Professor(s)	Hiroshi Ueda, Tamotsu Tsukahara		
Aim/ Goal/Method/ Aim/ Students comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. They discuss about the significance or controversial points in the report as well as authors' views. Audience including undergraduate, postgraduate and professors make comments and ask questions about the points, which are not clear. Goal/ Students can gain the skills to choose good reports of interest from databases. Students can appropriately explain the report written in English. Students can discuss the significance of the report and related works. Method/ Seminar style			
Class outline/Contents Class outline/ Through the introduction and discussion about the good reports, students learn the technology of presentation and knowledge of the advanced research. Contents/ By listening to the seminar given by elder students and professors, students learn the technology about the presentation and discussion skills. Regarding presentation, the choice of topics for good reports and power-point slide production. Regarding discussion, they learn the logic and ability to talk. The preparation of seminar starts with the choosing the report from the database using PubMed and online journals. Students decide the report for presentation through a discussion with senior students and professors. After intensive reading the report and related references, they produce the original figures and tables to make audience easily understand the contents. Using the figures and tables in the report and original ones, students explain the content of the report and discuss the importance of the paper taking the comments by audience.			
Key word	None		
Textbook, Teaching material, and Reference book	Research Journals (Nature and its family of sister journals, Science, Cell and its family of sister journals, PNAS, J.Neuroscienc, JBC)		
Evaluation	Logical explanation and discussion (100%)		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Pharmacology and Therapeutic Innovation]			
Time schedule code 201555082010M3	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Pharmacology and Therapeutic Innovation		
Professor / E-mail address / Laboratory / Tel/ Office hours Hiroshi Ueda / ueda@nagasaki-u.ac.jp / Pharmacology and Therapeutic Innovation / 095-819-2421 / Wed.12:00-12:50 (Accept any question by e-mail)			
Professor(s)	Hiroshi Ueda, Tamotsu Tsukahara		
Aim/ Goal/Method/ Aim/ Students comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. They discuss about the significance or controversial points in the report as well as authors' views. Audience including undergraduate, postgraduate and professors make comments and ask questions about the points, which are not clear. Goal/ Students can gain the skills to choose good reports of interest from databases. Students can appropriately explain the report written in English. Students can discuss the significance of the report and related works. Method/ Seminar style			
Class outline/Contents Class outline/ Through the introduction and discussion about the good reports, students learn the technology of presentation and knowledge of the advanced research. Contents/ By listening to the seminar given by elder students and professors, students learn the technology about the presentation and discussion skills. Regarding presentation, the choice of topics for good reports and power-point slide production. Regarding discussion, they learn the logic and ability to talk. The preparation of seminar starts with the choosing the report from the database using PubMed and online journals. Students decide the report for presentation through a discussion with senior students and professors. After intensive reading the report and related references, they produce the original figures and tables to make audience easily understand the contents. Using the figures and tables in the report and original ones, students explain the content of the report and discuss the importance of the paper taking the comments by audience.			
Key word	None		
Textbook, Teaching material, and Reference book	Research Journals (Nature and its family of sister journals, Science, Cell and its family of sister journals, PNAS, J.Neuroscience, JBC)		
Evaluation	Logical explanation and discussion (100%)		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 full year	Day・Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Pharmaceutical Chemistry]			
Time schedule code 201555082000K2	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical Chemistry		
Professor / E-mail address / Laboratory / Tel/ Office hours Masakazu Tanaka / matanaka@nagasaki-u.ac.jp / Pharmaceutical Chemistry / 095-819-2423 / Tuesday 16:00-18:00			
Professor(s)	Masakazu Tanaka, Makoto Oba		
Aim/ Goal/Method/ Aim/ To profound the specialized knowledge and follow the frontier of relevant research field through literature reading and presentation at the group meeting. Goal/ To master the skill of literature searching, and to develop the ability to exactly understanding the key points of the charged literature articles and presentation skill. Method/ seminar			
Class outline/Contents The student should select one or more original research papers each time that seem to be interesting to most of the group members from the main international journals, read carefully, try the best to understand the contexts, and present the reported research work before the group members. 1st & 2nd Introduction on literature searching 3rd -30th Present original research literature papers relating to the research topic of him/herself and discuss			
Key word	literature, presentation		
Textbook, Teaching material, and Reference book	Scientific journals in English		
Evaluation	Reading ability and presentation skill (100%)		
Requirements	None		
Remarks(URL)			
Message for students	Not only understanding the content of journal, but also presentation skill are important.		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Pharmaceutical Chemistry]			
Time schedule code 201555082010M2	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical Chemistry		
Professor / E-mail address / Laboratory / Tel/ Office hours Masakazu Tanaka / matanaka@nagasaki-u.ac.jp / Pharmaceutical Chemistry / 095-819-2423 / Tuesday 16:00-18:00			
Professor(s)	Masakazu Tanaka, Makoto Oba		
Aim/ Goal/Method/ Aim/ To learn the fundamental experimental manipulations and techniques. Goal/ Can carry out the routine experiments independently, and can summarize and present the experimental results. Method/ Seminar.			
Class outline/Contents A research subject will be assigned to each student, which is followed by an experimental training. During this period, the students are required to master the fundamental techniques for doing synthetic organic experiments. After that the students should work on their own research plan. Research results should be summarized and presented at the group meeting periodically.			
Key word	None		
Textbook, Teaching material, and Reference book	Scientific journals		
Evaluation	None		
Requirements	None		
Remarks(URL)			
Message for students	Discussions on experimental results are important.		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Pharmaceutical Organic Chemistry]			
Time schedule code 201555082000K4	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical Organic Chemistry		
Professor / E-mail address / Laboratory / Tel/ Office hours Susumi Hatakeyama / susumi@nagasaki-u.ac.jp, jishi@nagasaki-u.ac.jp / Pharmaceutical Organic Chemistry / 095-819-2426 / Mon.-Fri. 13:00-18:00			
Professor(s)	Susumi Hatakeyama, Jun Ishihara		
Aim/ Goal/Method/ Aim/ To attain the ability to properly access the databases and read journals and books to get the information required for the synthetic studies. Goal/ 1) Be able to get the proper journals and books from databases. 2) Be able to understand the contents of the journals and books. 3) Be able to discuss the chemistry described in the journals and books. Method/ The students select the subjects on synthetic chemistry from the up-to-date journals and books and present succinctly the topics in the class.			
Class outline/Contents The students select the subjects on synthetic chemistry from the up-to-date journals and books and discuss the topics in the class. 1: Learn how to get proper journals and books using databases. 2: Learn how to utilize the information obtained for carrying out the synthetic studies. 3: Present the subjects on synthetic chemistry from the up-to-date journals and books and discuss the topics in the class.			
Key word	None		
Textbook, Teaching material, and Reference book	Textbook, Teaching material, and Reference book/ Journals (JACS, JOC, OL, TL, Angew.Chem.Int.Ed., Chem.Commun, etc)		
Evaluation	Understanding (100%)		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Pharmaceutical Organic Chemistry]			
Time schedule code 201555082010M4	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical Organic Chemistry		
Professor / E-mail address / Laboratory / Tel/ Office hours Susumi Hatakeyama / susumi@nagasaki-u.ac.jp, jishi@nagasaki-u.ac.jp / Pharmaceutical Organic Chemistry / 095-819-2426 / Mon.-Fri. 13:00-18:00			
Professor(s)	Susumi Hatakeyama, Jun Ishihara		
Aim/ Goal/Method/ Aim/ To attain the ability to construct the target molecules. Goal/ 1) Be able to make a reasonable synthetic plan for the construction of the target molecule. 2) Be able to carry out the reactions to construct the target molecule. 3) Be able to purify the products and determine their structures by spectroscopic analyses. Method/ The students carry out the experiments in the synthesis of the structurally and biologically intriguing natural products.			
Class outline/Contents Class outline/ The synthesis of natural products. Contents/ 1: Collect the information concerning the target molecule by searching the databases and reading journals, and then make synthetic plans. 2: Determine one synthetic route by the evaluation of the above-mentioned synthetic plans. 3: Construct the required key intermediates. 4: Present the progress report in the group seminar and discuss the results. 5: Combine the intermediates prepared together to get the advanced intermediates. 6: Achieve the synthesis of the target molecule and confirm the structure by spectroscopic analyses. 7: Present the final report in the group seminar and discuss the results. 8: Present the final report in the group seminar and discuss the results.			
Key word	None		
Textbook, Teaching material, and Reference book	Textbook, Teaching material, and Reference book/ Journals (JACS, JOC, OL, TL, Angew.Chem.Int.Ed., Chem.Commun, etc)		
Evaluation	Attendance (90%) and Report (10%)		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Chemistry for Pharmaceuticals]			
Time schedule code 201555082000K5	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Synthetic Chemistry for Pharmaceuticals		
Professor / E-mail address / Laboratory / Tel/ Office hours Osamu Onomura / onomura@nagasaki-u.ac.jp / Synthetic Chemistry for Pharmaceuticals / 095-819-2429 / Mon. - Fri. 10:30 - 18:00			
Professor(s)	Osamu Onomura, Masami Kuriyama		
Aim/ Goal/Method/ Aim/ A major object is to stimulate you by learning what subjects are now current important topics in the field of synthetic organic chemistry directed toward medicinal chemistry through identifying some important literatures in a variety of related academic articles followed by brief description of the contents and discussions. Goal/ You can extract useful research articles by data bases and get necessary original papers. Furthermore, you can understand the contents of the literatures. Method/ Educational training for presentation and discussion concerning about your research are carried out.			
Class outline/Contents You read original articles written in English. By selection of research articles related to your research and brief summary of the contents, you get new information and presentation skills. 1st: Lecture on search skills of data bases (Scifinder, Beilstein).(Onomura & Kuriyama) 2nd: Lecture about methods to get original articles.(O & K) 3rd: Introducing one original literature related to your research, and discussion of the content (1) (O & K) 4th: Introducing one original literature related to your research, and discussion of the content (2) (O & K) 5th: Introducing one original literature related to your research, and discussion of the content (3) (O & K) 6th: Introducing one original literature related to your research, and discussion of the content (4) (O & K) 7th: Introducing one original literature related to your research, and discussion of the content (5) (O & K) 8th: Introducing one original literature related to your research, and discussion of the content (6) (O & K) 9th: Introducing one original literature related to your research, and discussion of the content (7) (O & K) 10th: Introducing one original literature related to your research, and discussion of the content (8) (O & K) 11th: Introducing one original literature related to your research, and discussion of the content (9) (O & K) 12th: Introducing one original literature related to your research, and discussion of the content (10) (O & K) 13th: Introducing one original literature related to your research, and discussion of the content (11) (O & K) 14th: Introducing one original literature related to your research, and discussion of the content (12) (O & K) 15th: Introducing one original literature related to your research, and discussion of the content (13) (O & K)			
Key word	Search for academic literatures, Summarization of literatures, Presentation		
Textbook, Teaching material, and Reference book	Academic journals (JACS, JOC, OL, Tetrahedron Letters, Angew. Chem. Int. Ed., Chem. Commun. Etc.)		
Evaluation	Understanding of research articles (100%)		
Requirements	None		
Remarks(URL)			
Message for students	In advance, read carefully more than three original papers.		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Chemistry for Pharmaceuticals]			
Time schedule code 201555082010M5	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Synthetic Chemistry for Pharmaceuticals		
Professor / E-mail address / Laboratory / Tel/ Office hours Osamu Onomura / onomura@nagasaki-u.ac.jp / Synthetic Chemistry for Pharmaceuticals / 095-819-2429 / Mon. - Fri. 10:30 - 18:00			
Professor(s)	Osamu Onomura, Masami Kuriyama		
Aim/ Goal/Method/ Aim/ You learn how to do experiment to get new and fruitful results in synthetic organic chemistry directed toward medicinal chemistry. Goal/ Planning rational synthetic routes to target molecules. The ability to carry out basic reactions necessary for preparation of complicated molecules. The skills to isolate desired products from reaction mixtures. The ability to prepare manuscripts to contr Method/ Educational training for searching, planning, experimental, and presentation skills related to your research subject.			
Class outline/Contents You read original literatures written in English. By selection of research articles related to your research project and presentation of the contents, you get new information and presentation skills. 1st: Search data bases to extract academic articles, and Read the articles to get information for preparation of target molecules. 2nd: Design new synthetic routes and plan synthetic experiment. (O & K) 3rd: Search and read academic articles related to the new routes. (O & K) 4th: Analysis of obtained information and determination of reasonable 3 synthetic routes. (O & K) 5th: Experiment of the 1st synthetic route. (O & K) 6th: Experiment of the 2nd synthetic route. (O & K) 7th: Experiment of the 3rd synthetic route. (O & K) 8th: Comparison of experimental results by methods 1-3 (O & K) 9th: Presentation of research results to select the best method. (O & K) 10th: Generality of selected synthetic method. (O & K) 11th: Measurement of physical data. (O & K) 12th: Experiments for analysis of reaction mechanism. (O & K) 13th: Summarization of research results for presentation in a symposium. (O & K) 14th: Presentation of research results in a symposium. (O & K) 15th: Preparation of a manuscript to contributable to a journal. (O & K)			
Key word	Synthetic methods, Analysis of reaction mechanism, Comparison of experimental results		
Textbook, Teaching material, and Reference book	Academic journals (JACS, JOC, OL, Tetrahedron Letters, Angew. Chem. Int. Ed., Chem. Commun. etc.), Data bases (Scifinder, Beilstein)		
Evaluation	Completion of research articles (100%).		
Requirements	None		
Remarks(URL)			
Message for students	In advance, master basic knowledge of organic chemistry.		

Academic year 2015 full year	Day・Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Genome-based Drug Discovery]			
Time schedule code 201555082000K6	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Genome-based Drug Discovery		
Professor / E-mail address / Laboratory / Tel/ Office hours Nobuhisa Iwata / iwata-n@nagasaki-u.ac.jp / Gene-based Drug Discovery / 095-819-2435 / Mon-Fri. 13:00-17:00			
Professor(s)	Nobuhisa Iwata, Keiro Shirotnani, Masashi Asai		
Aim/ Goal/Method/ Aim/ Training search, selection and evaluation of information, and enhancing own problem-solving abilities Goal/ At the end of this class, the students should be able to: Select appropriate information necessary for own research theme from overflowing information. Find out fundamental problem in own research field, and discuss it. Find appropriate avenues to resolve Method/ Presentation using slides and discussion in a small group			
Class outline/Contents Cultivate ability to find out fundamental problem in own research field and solve the problem by oneself. 1st: Search appropriate information necessary for own research theme using PubMed and so on. 2nd: Select appropriate information from overflowing ones. 3rd: Peruse papers published in scientific journals 4th: Find out fundamental problem in own research field, and discuss it with instructors. 5th: Find appropriate avenues to resolve the facing problem.			
Key words	Alzheimer's disease, pathogenesis, enzyme, recombinant DNA technology, animal model, drug discovery, development of early diagnostic method		
Textbook, Teaching material, and Reference book	Journals (J Biol Chem, J Neurosci, Neuron, Nature & its sister journals, Science, Cell & its sister journals, etc.)		
Evaluation	Active participation 80%, and achievement 20%		
Requirements	None		
Remarks(URL)			
Message for students	professional training		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Genome-based Drug Discovery]			
Time schedule code 201555082010M6	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Genome-based Drug Discovery		
Professor / E-mail address / Laboratory / Tel/ Office hours Nobuhisa Iwata / iwata-n@nagasaki-u.ac.jp / Gene-based Drug Discovery / 095-819-2435 / Mon-Fri. 13:00-17:00			
Professor(s)	Nobuhisa Iwata, Keiro Shirotani, Masashi Asai		
Aim/ Goal/Method/ Aim/ Designing an experimental plan to solve the problems, training experimental techniques, and evaluating obtained results. Goal/ At the end of this class, the students should be able to: Fulfill the experiments using appropriate methods and trained techniques according to the experimental plan, and make a paper to publish in scientific journals. Method/ Practice a research according to instructors' direction.			
Class outline/Contents Molecular biology of neurodegenerative diseases. 1st: molecular biological experiments 2nd: cell biological experiments 3rd: biochemical & enzymological experiments 4th: histochemical experiments 5th: animal experiments			
Key words	Alzheimer's disease, pathogenesis, enzyme, recombinant DNA technology, animal model, drug discovery, development of early diagnostic method		
Textbook, Teaching material, and Reference book	Journals (JBC, J Neurosci, Neuron, Nature & its sister journals, Science, Cell & its sister journals, etc.)		
Evaluation	Active participation 80%, and achievement 20%		
Requirements	None		
Remarks(URL)			
Message for students	Professional training		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Molecular Pharmacology of infectious Agents]			
Time schedule code 201555082000K7	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Molecular Pharmacology of infectious Agents		
Professor / E-mail address / Laboratory / Tel/ Office hours Nobuyuki Kobayashi / nobnob@nagasaki-u.ac.jp / Molecular Pharmacology of Infectious Agents / 819-2456 / Any time but need apointment			
Professor(s)	Nobuyuki Kobayashi, Kaio Kitazato		
Aim/ Goal/Method/ Aim/ To teach the topics of emerging infectious diseases Goal/ To understand and to be able to summarize the emerging infectious diseases Method/ Lecture and seminar using PowerPoint slides or printed documents			
Class outline/Contents Class outline/ Emerging infectious diseases are an important topics in terms of social issues and science. The study of replication of infectious agents and their interaction with host factors leads to a better understanding of infectious diseases and to help to develop new drugs of anti-infectious agents. 1st: Social problems of emerging infectious diseases 2nd: Characterization of infectious agents 3rd: Molecular therapy of Infectious agents 4th: Molecular mechanism of replication of infectious agents 5th: Strategy for drug development of anti-infectious agents 6th: Strategy for vaccine development of infectious agents 7th: Application of virus as vectors on human gene therapy			
Key word	Bacteria, Virus, Infectious Diseases		
Textbook, Teaching material, and Reference book	None		
Evaluation	Report		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Molecular Pharmacology of infectious Agents]			
Time schedule code 201555082010M7	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Molecular Pharmacology of infectious Agents		
Professor / E-mail address / Laboratory / Tel/ Office hours Nobuyuki Kobayashi / nobnob@nagasaki-u.ac.jp / Molecular Pharmacology of infectious Agents / 819-2456 / Any time but need apointment			
Professor(s)	Nobuyuki Kobayashi, Kaio Kitazato		
Aim/ Goal/Method/ Aim/ To learn the nature of infectious agents. Goal/ Be able to understand English articles and recognize nature of infectious agents. Method/ Use selected articles published in medical journals.			
Class outline/Contents Read medical articles published in English and understand the contents. Contents/ 1st - 10th : Basic Bacteriology. 11th - 20th : Basic Virology. 21st - 30th : Infectious Diseases.			
Key word	Bacteria, Virus, Infectious Diseases		
Textbook, Teaching material, and Reference book	None		
Evaluation	Report		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 full year	Day・Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Natural Product Chemistry]			
Time schedule code 201555082000K8	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Natural Product Chemistry		
Professor / E-mail address / Laboratory / Tel/ Office hours Takashi Tanaka / t-tanaka@nagasaki-u.ac.jp / Natural Product Chemistry / 2432 / Any time (Please make appointment by E-mail)			
Professor(s)	Takashi Tanaka, Yoshinori Saito, Yosuke Matsuo		
Aim/ Goal/Method/ Aim/ The aim is to study the methods for isolation of natural compounds from plants and spectroscopic technique for determination of the structures. Goal/ The goal is to acquire the ability to isolate natural products and determine the structure. Method/ Exercise and Training in the laboratory.			
Class outline/Contents 1st: Extraction and separation 2nd: Chromatography 3rd: Proton NMR 4th: Carbon NMR 5th: H-H COSY spectrum 6th: NOESY spectrum 7th: HSQC spectrum 8th: HMBC spectrum 9th: IR spectrum 10th: UV and CD spectra 11th: MS spectrum 12th: HPLC analysis 13th: Exercise I 14th: Exercise II 15th: Exercise III			
Key word	Chromatography, spectroscopy, Plant, Natural medicine		
Textbook, Teaching material, and Reference book	Textbooks of Natural product chemistry and Spectroscopic methods		
Evaluation	Attitude and results of exercise		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 full year	Day・Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Natural Product Chemistry]			
Time schedule code 201555082010M8	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Natural Product Chemistry		
Professor / E-mail address / Laboratory / Tel/ Office hours Takashi Tanaka / t-tanaka@nagasaki-u.ac.jp / Natural Product Chemistry / 2432 / Any time (Please make appointment by E-mail)			
Professor(s)	Takashi Tanaka, Yoshinori Saito, Yosuke Matsuo		
Aim/ Goal/Method/ Aim/ The aim is to achieve the isolation and structure determination of natural products using chromatographic methods and spectroscopic techniques. Goal/ The goal is to conduct a presentation including research plan, methods, results, and discussion. Method/ Training in laboratory under the direction of teaching staff.			
Class outline/Contents i 1st: selection of target plants or other natural resources. 2nd: collection of information from references 3rd: extraction of compounds from natural resources 4th: fractionation of the extract 5th: separation of the constituents I 6th: separation of the constituents II 7th: separation of the constituents III 8th: separation of the constituents IV 9th: structure determination by spectroscopic methods I 10th: structure determination by spectroscopic methods II 11th: structure determination by spectroscopic methods III 12th: structure determination by spectroscopic methods IV 13th: prepare presentation I 14th: prepare presentation II 15th: conduct presentation 16thwrite a thesis			
Key word	natural product, terpene, flavonoid, phenol, polyphenol		
Textbook, Teaching material, and Reference book	Textbooks of Natural product chemistry and Spectroscopic methods		
Evaluation	Attitude and results of presentation and thesis		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Medicinal Plant Biochemistry]			
Time schedule code 201555082000K9	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Medicinal Plant Biochemistry		
Professor / E-mail address / Laboratory / Tel/ Office hours Koji Yamada / kyamada@nagasaki-u.ac.jp / Medicinal Plant Biochemistry / 095-819-2462 / Monday 13:00-14:00			
Professor(s)	Koji Yamada		
Aim/ Goal/Method/ Aim/ It is aimed to acquire the writing ability of English article for the publishing of the experimental papers as a scientific researcher. Goal/ It is the goal to write logically the scientific articles without grammatical errors. Method/ Oral presentation with academic documents and discussions			
Class outline/Contents In this seminar, students must read the scientific English papers for your research themes, and your research data should be summarized in English. 1st: Lecture how to write an English paper. 2nd: Lecture how to write an English paper. 3rd: Explain one English paper related to your research, and discuss on their data. 4th: Explain one English paper related to your research, and discuss on their data. 5th: Explain one English paper related to your research, and discuss on their data. 6th: Explain one English paper related to your research, and discuss on their data. 7th: Explain one English paper related to your research, and discuss on their data. 8th: Explain one English paper related to your research, and discuss on their data. 9th: Explain one English paper related to your research, and discuss on their data. 10th: Explain one English paper related to your research, and discuss on their data. 11th: Explain one English paper related to your research, and discuss on their data. 12th: Explain one English paper related to your research, and discuss on their data. 13th: Explain one English paper related to your research, and discuss on their data. 14th: Explain one English paper related to your research, and discuss on their data. 15th: Explain one English paper related to your research, and discuss on their data.			
Key word	Article search, English paper, Presentation		
Textbook, Teaching material, and Reference book	English journals, JACS, JOC, JNP etc		
Evaluation	Understanding ability of English paper 50%, writing ability of English paper 50%		
Requirements	none		
Remarks(URL)			
Message for students	Specialized instruction. Editing and logical consideration of the data, and in advance planning of the research experiment.		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Medicinal Plant Biochemistry]			
Time schedule code 201555082010M9	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Medicinal Plant Biochemistry		
Professor / E-mail address / Laboratory / Tel/ Office hours Koji Yamada / kyamada@nagasaki-u.ac.jp / Medicinal Plant Biochemistry / 095-819-2462 / Monday 13:00-14:00			
Professor(s)	Koji Yamada		
Aim/ Goal/Method/ Aim/ It is aimed to study how to perform the experiments of scientific theme, and to make the scientific paper in English Goal/ It is the goal to independently make the experiment plan for the research, and to publish the research data into an academic journal. Method/ Carrying out individual experiments, getting the personal direction on each theme, and discussion about the data.			
Class outline/Contents Outline : The bioactive constituents obtained from marine organisms are isolated, and those structures are elucidated, and detailed bioactivities are studied, to develop the new medicine material of the marine origin. In this Experiment, the research on bioactive constituent is done for that. 1st: Make the strategy for the research based on the aim 2nd: Do the experiments 3rd: Do the experiments 4th: Do the experiments 5th: Do the experiments 6th: Analyze the experimental results, and solve problems. 7th: Do the experiments. 8th: Do the experiments. 9th: Do the experiments. 10th: Do the experiments. 11th: Do the experiments. 12th: Do the experiments. 13th: Summarize experimental results, report, and discuss. 14th: Present the research data at an academic meeting. 15th: Publish the research results in a scientific English journal.			
Key word	Article, scientific English paper, Presentation		
Textbook, Teaching material, and Reference book	Scientific journals: ACS, JOC, JNP etc, Database: SciFinder Scholar		
Evaluation	Complete English paper and its thesis 100%		
Requirements	none		
Remarks(URL)			
Message for students	Specialized instruction. Editing and logical consideration of the data, and in advance planning of the research experiment.		

Academic year 2015 full year	Day・Period out	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Structure Analysis for Chemicals]			
Time schedule code 201555082000L0	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course		Classroom Structure Analysis for Chemicals	
Professor / E-mail address / Laboratory / Tel/ Office hours Toshihide Maki / maki@nagasaki-u.ac.jp / Structure Analysis for Chemicals / 095-819-2465 / Mon. - Fri. 12:00 - 13:00			
Professor in charge of the subject		Toshihide Maki	
Aim/ Goal/Method/ Aim/ Searching, understanding, and analysis of current publications about organic chemistry and pharmaceutical sciences. Analysis of research reports based on their background, experiments, and results. Discussion about contents of research and future subjects. Goal/ Capability to search the target paper Skill for efficient use technology of a database Capability of understanding of specialized contents Method/ The original paper relevant to research is chosen from a scholarly journal, and a seminar reports. The paper is read and comprehended.			
Class outline/Contents i) Capability to read a special academic journal and to understand the contents ii) Capability to carry out reproducibility test by reading and dispelling the method of an experiment iii) Capability to investigate the results of a paper and to use for own research.			
Key word	database, search, summarization, presentation, discussion		
Textbook, Teaching material, and Reference book	Journals for organic chemistry (JACS, JOC, Org.Letter, Tetrahedron etc.)		
Evaluation	Skill for search 20%, selection of paper 20%, presentation 20%, and the discussion 40%		
Requirements	None		
Remarks(URL)			
Message for students			

Academic year 2015 full year	Day・Period out	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Structure Analysis for Chemicals]			
Time schedule code 201555082010N0	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course		Classroom Structure Analysis for Chemicals	
Professor / E-mail address / Laboratory / Tel/ Office hours Toshihide Maki / maki@nagasaki-u.ac.jp / Structure Analysis for Chemicals / 095-819-2465 / Mon. - Fri. 12:00 - 13:00			
Professor in charge of the subject		Toshihide Maki	
Aim/ Goal/Method/ Aim/ Capability of design-of-experiment planning for development of new lead compounds for pharmaceuticals Skill of experiment execution for synthesis and structure analysis Capability of original paper preparation based on result and rational consideration Goal/ Presentation at academic meeting and publishing paper about results of experiment. Rational planning of experiments and carrying out proper approach to achieve purpose. Method/ The original paper relevant to research is chosen from a scholarly journal, and a seminar reports. The paper is read and comprehended.			
Class outline/Contents Discussion about theme of research Carrying out experiments; synthesis and structure analysis and characterization of compounds Analyses of the obtained results; function of molecules and understanding of reactivity Structure- activity relationship Evaluation of compounds of interest Summarizing the results and preparation of reports			
Key word	database, search, summarization, presentation, discussion		
Textbook, Teaching material, and Reference book	academic journals		
Evaluation	The contents of published article 100%		
Requirements	None		
Remarks(URL)			
Message for students			

Academic year 2015 full year	Day・Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Chemistry of Biofunctional Molecules]			
Time schedule code 201555082000L1	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Chemistry of Biofunctional Molecules		
Professor / E-mail address / Laboratory / Tel/ Office hours Masaaki Kai / ms-kai@nagasaki-u.ac.jp / Chemistry of Biofunctional Molecules / 095-819-2438 / 12:00-18:00			
Professor(s)	Masaaki Kai, Tsutomu Kabashima, Takayuki Shibata		
Aim/ Goal/Method/ Aim/ To learn how to demonstrate about contents of scientific papers, and individual experimental data. Goal/ To attain ability of solution about individual research problems. Method/ Comprehension of various experimental data in scientific papers related to your research, and presentation of your experimental data.			
Class outline/Contents Demonstration of a scientific paper related to your research and of your experimental data each time. 1st: Present an English paper, and discuss about its data (1) 2nd : Present an English paper, and discuss about its data (2) 3rd: Introduce experimental data, and discuss about them (1) 4th: Introduce experimental data, and discuss about them (2) 5th: Study how to solve research problems and get a conclusion.			
Key word	Presentation		
Textbook, Teaching material, and Reference book	Electronic dictionary, English-Japanese dictionary, Internet information		
Evaluation	Presentation ability(30%), Discussion ability(30%), Aggressiveness(40%)		
Requirements	none		
Remarks(URL)			
Message for students	none		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Chemistry of Biofunctional Molecules]			
Time schedule code 201555082010N1	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Chemistry of Biofunctional Molecules		
Professor / E-mail address / Laboratory / Tel/ Office hours Masaaki Kai / ms-kai@nagasaki-u.ac.jp / Chemistry of Biofunctional Molecules / 095-819-2438 / 12:00-18:00			
Professor(s)	Masaaki Kai, Tsutomu Kabashima, Takayuki Shibata		
Aim/ Goal/Method/ Aim/ To learn how to carry out experiments of scientific theme, and to get the positive data. Goal/ To publish your research data as academic papers and to attain a master degree. Method/ Research of your scientific theme.			
Class outline/Contents Research one of the following scientific subjects: 1)genomics and proteomics, 2)optical organic reagents, 3)DNA analysis, 4)protein interaction, and 5)expression regulation of gene. 1st: Getting information about individual themes 2nd: Making the plan for the research 3rd: Experiments (1) 4th: Experiments (2) 5th: Experiments (3) 6th: Report of individual experimental data			
Key word	Experiment		
Textbook, Teaching material, and Reference book	none		
Evaluation	Reports		
Requirements	none		
Remarks(URL)			
Message for students	none		

Academic year 2015 full year	Day・Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Hygienic Chemistry]			
Time schedule code 201555082000L2	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Hygienic Chemistry		
Professor / E-mail address / Laboratory / Tel/ Office hours Morio Nakayama / morio@nagasaki-u.ac.jp / Hygienic Chemistry / 095-819-2441 / Monday – Friday 0:20 – 0:50 p.m. or by appointment			
Professor(s)	Takeshi Fuchigami		
Aim/ Goal/Method/ Aim/ It is aimed to acquire the writing ability of English article for the publishing of the experimental papers as ascientific researcher Goal/ It is the goal to write logically the scientific articles without grammatical errors Method/ Oral presentation with academic documents and discussions			
Class outline/Contents In this seminar, students must read the scientific English papers for your research themes, and your research data should be summarized in English. 1st: Lecture how to write an English paper. 2nd: Lecture how to write an English paper. 3rd: Lecture how to write an English paper. 4th: Lecture how to write an English paper. 5th: Lecture how to write an English paper. 6th: Lecture how to write an English paper. 7th: Lecture how to write an English paper. 8th: Lecture how to write an English paper. 9th: Make a plan to write an English paper : Arrangement of whole contents. 10th: Write the English article of the 'Introduction' and 'Materials and Methods'. 11th: Write the English article of the 'Results' and making the Figures and Tables. 12th: Write the English article of the 'Results'. 13th: Write the English article of the 'Discussion'. 14th: Write the English article of the 'Discussion'. 15th: Write the complete English article with the references.			
Key word	Article search, English paper, Presentation.		
Textbook, Teaching material, and Reference book	English journals, English-Japanese and Japanese-English dictionaries, Biochemical encyclopedia, Scientific and Chemical encyclopedia, Handbook of Analytical Chemistry, Handbook of Chemistry.		
Evaluation	Understanding ability of English paper 50%, writing ability of English paper 50%		
Requirements	Nothing		
Remarks(URL)	http://www.ph.nagasaki-u.ac.jp/lab/hygiene/index-e.html		
Message for students	Preparation of the English paper is required in advance.		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Hygienic Chemistry]			
Time schedule code 201555082010N2	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Hygienic Chemistry		
Professor / E-mail address / Laboratory / Tel/ Office hours Morio Nakayama / morio@nagasaki-u.ac.jp / Hygienic Chemistry / 095-819-2441 / Monday – Friday 0:20 – 0:50 p.m. or by appointment			
Professor(s)	Takeshi Fuchigami		
Aim/ Goal/Method/ Aim/ It is aimed to study how to perform the experiments of scientific theme. Goal/ It is the goal to independently make the experiment plan for the research Method/ Carrying out individual experiments, getting the personal direction on each theme, and discussion about the data.			
Class outline/Contents Research one of the following scientific subjects: 1) trace essential elements in biological system, 2) selenium as nutrient, 3) biomembrane mimetic materials, 4) ^{99m} Tc radiopharmaceuticals, and 5) amyloid imaging probe 1st: Make the strategy for the research. 2nd: Do the experiments 3rd: Analyze the experimental results, and solve problems. 4th: Summarize experimental results, report, and discuss. 5th: Present the research data at an academic meeting			
Key word	Strategy, Research, Presentation.		
Textbook, Teaching material, and Reference book	Scientific journals, Database		
Evaluation	Laboratory work (50%), Presentation and communication skill (50%),		
Requirements	Nothing		
Remarks(URL)	http://www.ph.nagasaki-u.ac.jp/lab/hygiene/index-e.html		
Message for students	Editing and logical consideration of the data, and in advance planning of the research experiment		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Analytical Chemistry]			
Time schedule code 201555082000L3	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Analytical Chemistry		
Professor / E-mail address / Laboratory / Tel/ Office hours Naotaka Kuroda / n-kuro@nagasaki-u.ac.jp / Analytical Chemistry / 095-819-2894 / Mon.-Fri. 16:00- 18:00			
Professor(s)	Naotaka Kuroda, Naoya Kishikawa		
Aim/ Goal/Method/ Aim/ This course provides fundamental instruction and experience in organizing and presenting oral presentations on a particular topic of interest regarding analytical chemistry from literature search. Goal/ Student will develop skills in scientific literature retrieval and oral presentation of scientific information from literature search. Method/ Student will summarize the content of the literature, explain, ask and answer the questions.			
Class outline/Contents This course will provide how to do a literature search, to summarize the appropriate information, to convey that information in an oral presentation. 1st: Effective use of the library and other information resources including Internet 2nd: Finding appropriate information utilizing the primary literature 3rd: Finding and evaluating information utilizing secondary sources such as the Internet 4th: Oral presentation of appropriate information from literature search, and ask and answer the questions 5th: Peer group discussions of the contents of oral presentation			
Key word	Analytical chemistry, Literature search		
Textbook, Teaching material, and Reference book	Appropriate literature from the journals of analytical chemistry		
Evaluation	Method of achievement evaluation/active participation (60%), presentation skill (20%), ask and answer the questions (20%)		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Analytical Chemistry]			
Time schedule code 201555082010N3	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Analytical Chemistry		
Professor / E-mail address / Laboratory / Tel/ Office hours Naotaka Kuroda / n-kuro@nagasaki-u.ac.jp / Analytical Chemistry / 095-819-2894 / Mon. - Fri. 16:00-18:00			
Professor(s)	Naotaka Kuroda, Naoya Kishikawa		
Aim/ Goal/Method/ Aim/ To learn experimental methods and skills used by analytical chemists, and to learn how to effectively present scientific results on the study of medicinal sciences of infectious diseases. Goal/ Student will develop skills in 1) operation of analytical equipments, 2) collection and treatment of experimental data, 3) oral presentation of scientific research, 4) writing scientific reports. Method/ Student will acquire knowledge and skills on experiments relate to analytical chemistry through laboratory work.			
Class outline/Contents To accomplish the goals, experiments have been designed to covers literature search, proper and safe operation of laboratory equipment, data collecting and report writing. 1st: Scientific literature retrieval on individual research project 2nd: Understanding of common techniques and instruments in analytical chemistry 3rd: Planning and conducting experiments 4th: Records and treatment of data obtained from the experimental protocols 5th: Presentation and discussion of research results with faculty members in laboratory and students 6th: Writing scientific reports			
Key word	Analytical chemistry, Laboratory work, Report writing		
Textbook, Teaching material, and Reference book	Appropriate literature on individual research project		
Evaluation	laboratory work (60%), presentation and communication skill (10%), reports (30%)		
Requirements	None		
Remarks(URL)			
Message for students	None		

Academic year 2015 full year	Day・Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Pharmacotherapeutics]			
Time schedule code 201555082000L4	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Pharmacotherapeutics		
Professor / E-mail address / Laboratory / Tel/ Office hours Kazuhiro Tsukamoto / ktsuka@nagasaki-u.ac.jp / Department of Pharmacotherapeutics / 095-819-2447 / Monday-Friday 9:00-17:00			
Professor(s)	Kazuhiro Tsukamoto, Shinji Kondo		
Aim/ Goal/Method/ Aim/ To teach clinical and molecular genetics Goal/ To understand the methods to identify the disease-susceptible and drug-responsible genes for multifactorial disorders, and an application to nucleic acids-based diagnosis Method/ Lecture using PowerPoint slides and printed documents			
Class outline/Contents The personalized medicine composes the nucleic acids-based diagnosis and genome-based gene discovery including the susceptible genes for diseases and the drug-responsible genes. The association study using genetic polymorphic markers is a strong tool to identify the disease-susceptible and drug-responsible genes for multifactorial disorders. 1st: Clinical human genetics I 2nd: Clinical human genetics II 3rd: Molecular human genetics I 4th: Molecular human genetics II 5th: Genetic polymorphisms and detecting techniques 6th: Multifactorial disorders and association study 7th: Identification of disorder-susceptible and drug-responsible genes 8th: Nucleic acids-based diagnosis			
Key word	genetic polymorphisms, association study, multifactorial disorders, nucleic acids-based diagnosis		
Textbook, Teaching material, and Reference book	none		
Evaluation	brief examination at each class (40%) and report (60%)		
Requirements	none		
Remarks(URL)			
Message for students	none		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Pharmacotherapeutics]			
Time schedule code 201555082010N4	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Pharmacotherapeutics		
Professor / E-mail address / Laboratory / Tel/ Office hours Kazuhiro Tsukamoto / ktsuka@nagasaki-u.ac.jp / Department of Pharmacotherapeutics / 095-819-2447 / Monday-Friday 9:00-17:00			
Professor(s)	Kazuhiro Tsukamoto, Shinji Kondo		
Aim/ Goal/Method/ Aim/ To identify the disease-susceptible genes or drug-responsible genes by candidate gene-based association study Goal/ To learn molecular genetics techniques and skills in both bioinformatics and statistical analyses, as well as to understand the concept of methodology on association study, especially case-control study Method/ Performance of molecular genetics, bioinformatics, pharmacogenomics, and case-control study			
Class outline/Contents The personalized medicine composes the nucleic acids-based diagnosis and genome-based gene discovery including the susceptible genes for diseases and the drug-responsible genes. The association study using genetic polymorphic markers is a strong tool to identify the disease-susceptible and drug-responsible genes for multifactorial disorders. 1st: DNA and RNA extraction 2nd: Selection of candidate genes for the disease-susceptibility or drug responsibility 3rd: Getting information on genetic polymorphisms of candidate genes from genome database (bioinformatics) 4th: Analyses of genetic polymorphisms of candidate genes (1) 5th: Analyses of genetic polymorphisms of candidate genes (2) 6th: Analyses of genetic polymorphisms of candidate genes (3) 7th: Statistical analyses 8th: Discussion on the results 9th: Writing a manuscript 10th: Submission of a master's dissertation			
Key word	genetic polymorphisms, bioinformatics, association study, disease-susceptibility, drug responsibility		
Textbook, Teaching material, and Reference book	None		
Evaluation	Master's dissertation (100%)		
Requirements	none		
Remarks(URL)			
Message for students	none		

Academic year 2015 full year	Day・Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Pharmaceutical Informatics]			
Time schedule code 201555082000L5	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical Informatics		
Professor / E-mail address / Laboratory / Tel/ Office hours Shigeru Kawakami / skawakam@nagasaki-u.ac.jp / Pharmaceutical Informatics / 095-819-8563/ 12:00-13:00			
Professor(s)	Shigeru Kawakami		
Aim/ Goal/Method/ Aim/ Training of searching, presentation and evaluation of information for problem solving. Goal/ At the end of this class, the students should be able to: Show the problem in relation to own research theme. Indicate information or own opinion with suitable materials. Discuss the problem contractively. Method/ Presentation using slides and discussion in a small group.			
Class outline/Contents The skill of problem solving is very important to progress the research by oneself. To cultivate this skill, presentation in relation to their research themes and discussion in a small group are charged. 1st: Search the materials such as scientific journals to solve the problems. 2nd: Digest scientific journals and prepare visual materials. 3rd: Answer the question correctly and discuss with charged teachers. 4th: Conclude the soluble methods for the problems.			
Key word	drug information, problem solving		
Textbook, Teaching material, and Reference book	Scientific journals		
Evaluation	Active participation 80%, Produced result 20%		
Requirements	none		
Remarks(URL)			
Message for students	none		

Academic year 2015 full year	Day・Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Pharmaceutical Informatics]			
Time schedule code 201555082010N5	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Pharmaceutical Informatics		
Professor / E-mail address / Laboratory / Tel/ Office hours Shigeru Kawakami / skawakam@nagasaki-u.ac.jp / Pharmaceutical Informatics / 095-819-8563 / 12:00-13:00			
Professor(s)	Shigeru Kawakami		
Aim/ Goal/Method/ Aim/ Learn the way how to progress a pharmacoinformatic research and cultivate a research mind. Goal/ At the end of this class, the student should be able to: Understand problem in relation to their research theme. Show the research plan. Carry on the laboratory works according to the plan. Make a publication of the outcome. Method/ Practice a research with laboratory works and investigate according to the charged teachers' advices.			
Class outline/Contents Develop the research related to the theme as follow: Study on analysis of abused drugs in biological samples. Study on the development of analytical methods for ultra-trace components in biological samples. Study on pharmacokinetics for drug-drug interactions. Study on quality control of health foods. 1st: Understand the way how to extract problems in relation to their research themes. 2nd: Show the research plan. 3rd: Carry on the laboratory works using scientific instruments. 4th: Analyze the obtained results with a suitable statistical technique. 5th: Publication of outcome. (including presentation at meeting)			
Key word	drug information		
Textbook, Teaching material, and Reference book	Scientific journals		
Evaluation	Active participation 80%, Produced result 20%		
Requirements	none		
Remarks(URL)			
Message for students	none		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 4.0
Subject Exercise Biomedical Sciences [Pharmaceutics]			
Time schedule code 201555082000L6	Student year(s) 1st, 2nd	Class description Seminar	Class type NUPGP
Object Student Master course	Classroom Pharmaceutics		
Professor / E-mail address / Laboratory / Tel/ Office hours Koyo Nishida / koyo-n@nagasaki-u.ac.jp / Pharmaceutics / 095-819-8566 / Mon. - Fri. 13:00 - 18:00			
Professor(s)	Koyo Nishida, Shintaro Fumoto		
Aim/ Goal/Method/ Aim/ The aim of this subject is to acquire abilities to understand scientific paper(s), summarize background, method and results, and make a presentation of the paper(s). Goal/ To acquire abilities for objective critique and creative research, students should precisely understand positioning of findings in scientific papers at the area of relevant study, be able to point out problems to be elucidated, and consider concrete solut Method/ Searching and understanding scientific papers, questions and answers.			
Class outline/Contents Understanding scientific papers written in English. By making a presentation of the papers, students can obtain recent information and acquire the ability to use scientific terms. 1st: Attending a lecture for database and searching method of scientific papers. 2nd: Attending a lecture how to read experimental methods, results and discussion. 3rd: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (1) 4th: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (2) 5th: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (3) 6th: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (4) 7th: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (5) 8th: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (6) 9th: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (7) 10th: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (8) 11th: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (9) 12th: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (10) 13th: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (11) 14th: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (12) 15th: Selecting a scientific paper, making a presentation of summary of the study, and replying to questions (13)			
Key word	Searching scientific papers, how to read scientific papers, questions and answers		
Textbook, Teaching material, and Reference book	Scientific journals written in English		
Evaluation	Ability to understand scientific papers 50%		Ability for questions and answers 50%
Requirements	none		
Remarks(URL)			
Message for students	Preparation studies for reading scientific papers and replying to questions are required.		

Academic year 2015 full year	Day·Period OUT	Required/Elective class required	Number of credits 16.0
Subject Experiment Biomedical Sciences [Pharmaceutics]			
Time schedule code 201555082010N6	Student year(s) 1st, 2nd	Class description Experiment	Class type NUPGP
Object Student Master course	Classroom Pharmaceutics		
Professor / E-mail address / Laboratory / Tel/ Office hours Koyo Nishida / koyo-n@nagasaki-u.ac.jp / Pharmaceutics / 095-819-8566 / Mon. - Fri. 13:00 - 18:00			
Professor(s)	Koyo Nishida, Shintaro Fumoto		
Aim/ Goal/Method/ Aim/ It is required for researchers in the clinical pharmacy to develop novel drug delivery system delivering drugs to specific target site. Researchers also should individually resolve problems of the research. The aim of this subject is to acquire these abilities through experiments and discussion. Goal/ The goal of this subject is to develop administration methods and formulations for delivering drugs to specific organ. Student will report findings in academic conference and write scientific paper(s) for submitting to journal. Method/ Scheduling and performing experiments, Writing scientific papers.			
Class outline/Contents Students will experiment about drug delivery system delivering drugs to specific organ. For this purpose, absorption of drugs from organ surface, in vivo disposition of drugs, administration methods, administration preparations, species differences, animal scale-up, and formulations for future clinical application will be investigated. 1st: Study about recent researches in drug delivery system. 2nd: Scheduling experiments. Comprehending unknown points by understanding published information. 3rd: Deliberating administration methods for drug delivery system. 4th: Deliberating administration preparations for drug delivery system. 5th: Discussion of experimental plan on seminar of Department of Pharmaceutics. 6th: Study about disposition of drugs after administration onto organ surface. 7th: Study about experimental method utilizing glass-made cylindrical diffusion cell for investigation of absorption from organ surface. 8th: Study about experimental condition (administration dose, volume) for organ surface application of drugs. 9th: Study about formulations for administration of drugs onto organ surface. 10th: Discussion of findings in midterm conference of Department of Pharmaceutics. 11th: Study about formulations which are applicable for clinical use. 12th: Study about species differences and animal scale-up. 13th: Discussion of findings in final conference of Department of Pharmaceutics. 14th: Writing draft in English. 15th: Completing scientific paper and submitting it to a scientific journal.			
Key word	DDS		
Textbook, Teaching material, and Reference book	Paper		
Evaluation	50% writing paper, 50% experiment		
Requirements	Scientific English		
Remarks(URL)			
Message for students	none		