学期／Semester	2018年度／Academic Year 前期／First Semester	曜日・校時／Day・Period	月／Mon 3
開講期間／Class period	2018/04/01～2018/09/30		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//1.0
時間割コード／Time schedule code	20185503150110	科目番号／Subject code	55031501
科目ナンバリングコード／Numbering Code	BMMP 51632_783		
授業科目名／Subject	Molecular Biology of Neurodegenerative I／Molecular Biology of Neurodegenerative Diseases I		
編集担当教員／Professor in charge of putting together the course syllabus	岩田 修永／Iwata Nobuhisa, 城谷 圭朗／Shirotani Keiro		
授業担当教員名（科目責任者）／Professor in charge of the subject	岩田 修永／Iwata Nobuhisa		
授業担当教員名（オムニバス科目等）／Professor(s)	岩田 修永／Iwata Nobuhisa, 城谷 圭朗／Shirotani Keiro		
科目分類／Class type	特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等） /Target students	iwata-n@nagasaki-u.ac.jp		
担当教員Eメールアドレス/E-mail address	iwata-n@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Gene-based Drug Discovery		
担当教員TEL/Tel	095-819-2435		
担当教員オフィスアワー/Office hours	Mon-Fri. 13:00-17:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	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.		
授業到達目標/Course goals	To understand and to be able to summarize molecular mechanisms of the diseases and potential of biotechnology against the diseases.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy ■汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness □考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Active participation 40%, brief examination after the class 30% and report 30%		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review	Preparation: It is necessary to get a better understanding by reading references and related review articles in the paper you selected. Review: Re-examine something pointed out by lecturers or raised by discussion, and make sure your understanding.		
キーワード/Key word	dementia, neurodegenerative diseases, Alzheimer's disease, neuropathologies, animal models, proteases, drug discovery, clinical biomarker		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	A handout of selected PowerPoint slides used in each lecture.		
受講要件（履修条件）/Prerequisites, etc.	To whom take this class must have fundamental knowledge on neurobiology and molecular biology.		

アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp
備考（URL）/Remarks(URL)	http://www.alzforum.org/
学生へのメッセージ/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.
授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
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) [Asai]
4th	Molecular mechanism of the pathogenesis of Alzheimer's disease (2) [Asai]
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

学期／Semester	2018年度／Academic Year 前期／First Semester	曜日・校時／Day・Period	月／Mon 2
開講期間／Class period	2018/04/01～2018/09/30		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//1.0
時間割コード／Time schedule code	20185503100013	科目番号／Subject code	55031000
科目ナンバリングコード／Numbering Code	BMMP 53332_782		
授業科目名／Subject	Analytical Chemistry I／Analytical Chemistry in Health and Environmental Sciences I		
編集担当教員／Professor in charge of putting together the course syllabus	黒田 直敬／Naotaka Kuroda, 岸川 直哉／Kishikawa Naoya		
授業担当教員名（科目責任者）／Professor in charge of the subject	黒田 直敬／Naotaka Kuroda		
授業担当教員名（オムニバス科目等）／Professor(s)	黒田 直敬／Naotaka Kuroda, 岸川 直哉／Kishikawa Naoya		
科目分類／Class type	講義科目（区分D）, 特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	〔薬学〕本館５階リフレッシュルーム／Pharmaceutical School 5th floor refresh room		
対象学生（クラス等） /Target students	Master course		
担当教員Eメールアドレス/E-mail address	n-kuro@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Analytical Chemistry		
担当教員TEL/Tel	095-819-2894		
担当教員オフィスアワー/Office hours	Mon.～Fri. 13:30-17:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	Understanding of (1) the concepts and principles underlying the highly sensitive detection techniques using luminescence, and (2) their typical application to biomedical and environmental analysis.		
授業到達目標/Course goals	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.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy □汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness □考えをやり取りする力／Ability to exchange ideas ■国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	□A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above ■F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	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.		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	HPLC, fluorescence, chemiluminescence		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Reference Book: Modern Derivatization Methods for Separation Sciences, Edited by T. Toyo'oka, 1999, JohnWiley & Sons Ltd.; Chemiluminescence in Analytical Chemistry, Edited by A.M. Garcia-Campana, W.R.G. Baeyens, 2001, Marcel Dekker Inc.		
受講要件（履修条件）/Prerequisites, etc.	None		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information (TEL)095-819-2006 (FAX)095-819-2948 (E-MAIL)support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	None		
授業計画詳細／Course Schedule			

回(日時)／Time(date and time)	授業内容／Contents
1st	Introduction to detection techniques based on luminescence for biomedical and environmental analysis.
2nd	Basics of luminescence
3rd	Fluorescence in analytical chemistry
4th	Chemiluminescence and bioluminescence in analytical chemistry
5th	Latest technologies of luminescence in analytical chemistry
6th	Application of luminescence to biomedical and environmental analysis (1)
7th	Application of luminescence to biomedical and environmental analysis (2)
8th	General overview and preparing of a report

学期／Semester	2018年度／Academic Year 前期／First Semester	曜日・校時／Day・Period	火／Tue 3
開講期間／Class period	2018/04/01～2018/09/30		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//1.0
時間割コード／Time schedule code	20185503120008	科目番号／Subject code	55031200
科目ナンバリングコード／Numbering Code	BMMP 51332_781		
授業科目名／Subject	Bioorganic Chemistry I／Bioorganic Chemistry for Environmental Science I		
編集担当教員／Professor in charge of putting together the course syllabus	田中　正一／Tanaka Masakazu, 大庭　誠／Oba Makoto, 上田　篤志／Ueda Atsushi		
授業担当教員名（科目責任者）／Professor in charge of the subject	田中　正一／Tanaka Masakazu		
授業担当教員名（オムニバス科目等）／Professor(s)	田中　正一／Tanaka Masakazu, 大庭　誠／Oba Makoto, 上田　篤志／Ueda Atsushi		
科目分類／Class type	講義科目（区分D）, 特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	〔薬学〕本館３階セミナー室／Pharmaceutical School 3rd floor seminar room		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	matanaka@ nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Pharmaceutical Chemistry		
担当教員TEL/Tel	095-819-2423		
担当教員オフィスアワー/Office hours	Tuesday 16:00-18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To provide the students with fundamental knowledge of 3D structures, bioorganic molecules, including asymmetric reactions, and polymer chemistries.		
授業到達目標/Course goals	To understand how the three-dimensional structures of organic molecules can be synthesized, and also how the polymer chemistry can be applied to medicine.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　□汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Contribution in group discussion (50%), and completion of assignments (50%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	3D structure, stereochemistry, catalysis, polymer chemistry		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Printed documents		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	The three-dimensional structures of molecules and polymer chemistry are important for drug design.		
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

1st	Activities of stereoisomers [M. Tanaka]
2nd	Basic of stereochemistry [M. Tanaka]
3rd	Enantioselective reaction [M. Tanaka]
4th	Diastereoselective reaction [M. Tanaka]
5th	Example of asymmetric reactions [M. Tanaka]
6th	Polymer chemistry [Oba]
7th	Application of polymer chemistry -Gel- [Oba]
8th	Stereoselective synthesis of marine natural products and their application to drug development [Ueda]

学期／Semester	2018年度／Academic Year 前期／First Semester	曜日・校時／Day・Period	水／Wed 2
開講期間／Class period	2018/04/01～2018/09/30		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//1.0
時間割コード／Time schedule code	20185503173109	科目番号／Subject code	55031731
科目ナンバリングコード／Numbering Code	BMMP 51232_784		
授業科目名／Subject	Pharmacology and Drug Discovery I／Pharmacology and Drug Discovery I		
編集担当教員／Professor in charge of putting together the course syllabus	植田　弘師／Ueda Hiroshi, 塚原　完／Tsukahara Tamotsu		
授業担当教員名（科目責任者）／Professor in charge of the subject	植田　弘師／Ueda Hiroshi		
授業担当教員名（オムニバス科目等）／Professor(s)	植田　弘師／Ueda Hiroshi, 塚原　完／Tsukahara Tamotsu		
科目分類／Class type	特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	〔薬学〕本館４階セミナー室／Pharmaceutical School 4th floor seminar room		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	ueda@nagasaki-u.ac.jp ttamotsu@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Pharmacology and Therapeutic Innovation		
担当教員TEL/Tel	095-819-2421, 2473		
担当教員オフィスアワー/Office hours	Accept any question by e-mail		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To teach the mechanism of acute and chronic pain / To teach the new approaches of drug discovery against some topics		
授業到達目標/Course goals	To understand and to be able to summarize the mechanisms underlying pain and the therapeutic innovation in drug discovery		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　□汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Active commitment (50%) to the lecture and examination (50%) on each topic		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Chronic pain, Stroke, Infectious disease, Cancer, Medicinal chemistry		
教科書・教材・参考書/Textbook,Teaching material,and Reference book			
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

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)

学期／Semester	2018年度／Academic Year 前期／First Semester	曜日・校時／Day・Period	金／Fri 2
開講期間／Class period	2018/04/01～2018/09/30		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//1.0
時間割コード／Time schedule code	20185503160012	科目番号／Subject code	55031600
科目ナンバリングコード／Numbering Code	BMMP 52132_785		
授業科目名／Subject	Natural Product Chemistry I／Natural Product Chemistry for Infectious Diseases I		
編集担当教員／Professor in charge of putting together the course syllabus	田中 隆／Tanaka Takashi, 松尾 洋介／Matsuo Yosuke, 齋藤 義紀／Saito Yoshinori		
授業担当教員名（科目責任者）／Professor in charge of the subject	田中 隆／Tanaka Takashi		
授業担当教員名（オムニバス科目等）／Professor(s)	田中 隆／Tanaka Takashi, 松尾 洋介／Matsuo Yosuke, 齋藤 義紀／Saito Yoshinori		
科目分類／Class type	講義科目（区分D）, 特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	〔薬学〕本館３階セミナー室／Pharmaceutical School 3rd floor seminar room		
対象学生（クラス等） /Target students	NUPGP		
担当教員Eメールアドレス/E-mail address	t-tanaka@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Natural Product Chemistry		
担当教員TEL/Tel	095-819-2432		
担当教員オフィスアワー/Office hours	Accepted by e-mail		
授業の概要及び位置づけ/Course overview and relationship to other subjects	Master the biosynthesis pathway of natural products, separation, structure elucidation.		
授業到達目標/Course goals	To explain the methods in natural product chemistry and classifying the natural products		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	□主体性／Autonomy ■汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness □考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	report(20%), attendance(80%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	biosynthesis, natural products, secondary metabolites, polyphenol		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	reference book: Dewick, Medicinal Natural Product Chemistry		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006 （FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)	http://www.ph.nagasaki-u.ac.jp/lab/natpro/index-j.html		
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule

回(日時)／Time(date and time)	授業内容／Contents
1st	Extraction and separation of Natural Products.

2nd	Structure determination by spectroscopic and chemical method
3rd	Biosynthetic pathway for Natural compounds
4th	How to determine the Absolute Configuation
5th	Chemical Ecology (Chemical interaction between plants and animals)
6th	Chemistry of Plant defense and Development of new Medicine
7th	Chemical constituents of Vegitables and Fruits and their Health Benefits
8th	Biomimetic synthesis of plant polyphenols

学期／Semester	2018年度／Academic Year 前期／First Semester	曜日・校時／Day・Period	金／Fri 2
開講期間／Class period	2018/04/01～2018/09/30		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//1.0
時間割コード／Time schedule code	20185503151011	科目番号／Subject code	55031510
科目ナンバリングコード／Numbering Code	BMMP 55142_783		
授業科目名／Subject	Molecular Biology of Infectious AgentsII／Molecular Biology of Infectious Agents II		
編集担当教員／Professor in charge of putting together the course syllabus	北里　海雄／Kitazato Kaio		
授業担当教員名（科目責任者）／Professor in charge of the subject	北里　海雄／Kitazato Kaio		
授業担当教員名（オムニバス科目等）／Professor(s)	北里　海雄／Kitazato Kaio		
科目分類／Class type	講義科目（区分D），特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	〔薬学〕本館２階セミナー室／Pharmaceutical School 2nd floor seminar room		
対象学生（クラス等）　/Target students	master course		
担当教員Eメールアドレス/E-mail address	kkholi@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Lab of Molecular Pharmacology of infectious agents		
担当教員TEL/Tel	095-819-2457		
担当教員オフィスアワー/Office hours	Email anytime is OK, meeting time 5：00-6：00pm		
授業の概要及び位置づけ/Course overview and relationship to other subjects	Aim: To teach the topics of emerging infectious diseases		
授業到達目標/Course goals	Goal: To understand and to be able to summarize the emerging infectious diseases and current antiviral therapy for viral diseases.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy ■汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness ■考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading			
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	virus diseases, antivirals, vaccine development		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Articles and reviews for virus diseases from top journals		
受講要件（履修条件）/Prerequisites, etc.	Method of achievement evaluation/ attendance (50%) and report (50%)		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule

回(日時)／Time(date and time)	授業内容／Contents
1	1. Introduction to infectious diseases
2	Current topics in gut microbiota and immunity I

3	Current topics in gut microbiota and immunity II
4	Current topics in gut microbiota and immunity III
5	Current topics in gut microbiota and immunity IV
6	Application of gut microbiota metabolites
7	Vaccine development
8	Perspective in gut microbiome research

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	火／Tue 3
開講期間／Class period	2018/10/01～2019/03/31		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//1.0
時間割コード／Time schedule code	20185503141007	科目番号／Subject code	55031410
科目ナンバリングコード／Numbering Code	BMMP 53242_787		
授業科目名／Subject	Inorganic Chemistry II／Inorganic Chemistry in Health and Environmental Sciences II		
編集担当教員／Professor in charge of putting together the course syllabus	中山 守雄／Nakayama Morio, 淵上 剛志／Fuchigami Takeshi, 麓 伸太郎／Fumoto Shintaro, 西田 孝洋／Nishida Koyo		
授業担当教員名（科目責任者）／Professor in charge of the subject	中山 守雄／Nakayama Morio		
授業担当教員名（オムニバス科目等）／Professor(s)	中山 守雄／Nakayama Morio, 淵上 剛志／Fuchigami Takeshi, 麓 伸太郎／Fumoto Shintaro, 西田 孝洋／Nishida Koyo		
科目分類／Class type	講義科目（区分D）, 特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	〔薬学〕本館５階リフレッシュルーム／Pharmaceutical School 5th floor refresh room		
対象学生（クラス等） /Target students	Master course		
担当教員Eメールアドレス/E-mail address	morio@nagasaki-u.ac.jp(Nakayama), t-fuchi@nagasaki-u.ac.jp(Fuchigami), koyo-n@nagasaki-u.ac.jp(Nishida), sfumoto@nagasaki-u.ac.jp(Fumoto)		
担当教員研究室/Instructor office	Hygienic Chemistry		
担当教員TEL/Tel	095-819-2441()Nakayama). 095-819-2442(Fuchigami), 095-819-8566(Nishida), 095-819-8568(Fumoto)		
担当教員オフィスアワー/Office hours	Monday－Friday 0:20－0:50 p.m. or by appointment		
授業の概要及び位置づけ/Course overview and relationship to other subjects	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.		
授業到達目標/Course goals	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.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy □汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness □考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Grading will be based on midterm and/or final exam (80%) and report (20%). (NOTICE : On-time regular attendance is required throughout the class.)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Metal, Metalloid, Essential element, Radiopharmaceutical, Nuclear Medicine, Diagnosis, DDS		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Textbook, Teaching Material, and Reference Book / Textbook and reference materials are not specified.		
受講要件（履修条件）/Prerequisites, etc.	Nothing		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006 （FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			

学生へのメッセージ/Message for students	Basically, the instructors will give handout s of selected PowerPoint slides to be used in each lecture out to the attendees.
授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
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	Proteomic Analysis in Animal Model and Human I (Ohyama)
5th	Proteomic Analysis in Animal Model and Human I (Ohyama)
6th	Drug Delivery Systems (Nishida and Fumoto)
7th	Drug Delivery Systems (Nishida and Fumoto)
8th	Review

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	水／Wed 3
開講期間／Class period	2018/10/01～2019/03/31		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//1.0
時間割コード／Time schedule code	20185503191003	科目番号／Subject code	55031910
科目ナンバリングコード／Numbering Code	BMMP 51542_781		
授業科目名／Subject	Synthesis of Drugs II／Synthesis of Drugs for Infectious Diseases II		
編集担当教員／Professor in charge of putting together the course syllabus	尾野村　治／Onomura Osamu, 栗山　正巳／Kuriyama Masami		
授業担当教員名（科目責任者）／Professor in charge of the subject	尾野村　治／Onomura Osamu		
授業担当教員名（オムニバス科目等）／Professor(s)	尾野村　治／Onomura Osamu, 栗山　正巳／Kuriyama Masami		
科目分類／Class type	講義科目（区分D）, 特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	〔薬学〕本館３階セミナー室／Pharmaceutical School 3rd floor seminar room		
対象学生（クラス等）　/Target students	1st, 2nd		
担当教員Eメールアドレス/E-mail address	onomura@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Synthetic Chemistry for Pharmaceuticals		
担当教員TEL/Tel	095-819-2429		
担当教員オフィスアワー/Office hours	Mon. - Fri. 10:30 - 18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	You learn systematically selective reactions which synthesize complicated organic molecules and are necessary for development of new drugs for infectious diseases. Professional education		
授業到達目標/Course goals	(1) You can explain representative asymmetric reactions. (2) You can get practical knowledge necessary for invention of new drugs.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy ■汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness ■考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Exercise (30%), Test (30%), Report (40%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	None		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Documents prepared from recent literatures are distributed.		
受講要件（履修条件）/Prerequisites, etc.	None		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	In advance, master basic knowledge of organic chemistry.		
授業計画詳細／Course Schedule			

回(日時)／Time(date and time)	授業内容／Contents
1	Selective organic synthesis utilizing the characteristics of nitrogen I (Onomura)
2	Selective organic synthesis utilizing the characteristics of nitrogen II (Onomura)
3	Selective organic synthesis utilizing the characteristics of nitrogen III (Onomura)
4	Synthesis of optically active cyclic amino compounds (Onomura)
5	Selective organic synthesis utilizing the characteristics of silicon (Kuriyama)
6	Selective organic synthesis utilizing the characteristics of borone (Kuriyama)
7	Selective organic synthesis utilizing the characteristics of fluorine (Kuriyama)
8	Synthesis of sugars (Kuriyama)

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	木／Thu 2
開講期間／Class period	2018/10/01～2019/03/31		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//1.0
時間割コード／Time schedule code	20185503131001	科目番号／Subject code	55031310
科目ナンバリングコード／Numbering Code	BMMP 51142_783		
授業科目名／Subject	Cell Biology for Health Science II／Cell Biology for Health Science II		
編集担当教員／Professor in charge of putting together the course syllabus	武田 弘資／Takeda Kohsuke, 谷村 進／Tanimura Susumu		
授業担当教員名（科目責任者）／Professor in charge of the subject	武田 弘資／Takeda Kohsuke		
授業担当教員名（オムニバス科目等）／Professor(s)	武田 弘資／Takeda Kohsuke, 谷村 進／Tanimura Susumu		
科目分類／Class type	講義科目（区分D）, 特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	〔薬学〕本館４階セミナー室／Pharmaceutical School 4th floor seminar room		
対象学生（クラス等） /Target students	Master course		
担当教員Eメールアドレス/E-mail address	takeda-k@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Cell Regulation		
担当教員TEL/Tel	095-819-2417		
担当教員オフィスアワー/Office hours	At any time by e-mail		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To learn the mechanisms and significance of intracellular signal transduction regulating various cellular functions.		
授業到達目標/Course goals	To undestand the mechanisms of intracellular signal transduction and their dysregulation in various diseases.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	□主体性／Autonomy ■汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness □考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Attendance (40%), Report (60%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	signal transduction, cell motility, stress response, cancer, inflammation, metabolism, mitochondria		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Reference book: Molecular Biology of the Cell 5th Edition		
受講要件（履修条件）/Prerequisites, etc.	Those who take this class must have fundamental knowledge on cell biology and molecular biology.		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006 （FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

1st: Oct 4	Overview [Takeda]
2nd: Oct 11	Stress signaling and inflammation [Takeda]
3rd: Oct 18	Mechanisms of signal transduction-1 [Takeda]
4th: Oct 26	Regulation and function of small G protein family [Takeda]
5th: Nov 1	Mechanisms of signal transduction-2 [Takeda]
6th: Nov 8	Mechanisms of signal transduction-3 [Takeda]
7th: Nov 15	Mechanisms of signal transduction-4 [Takeda]
8th: Nov 22	Regulation of cell motility [Tanimura]

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	木／Thu 2
開講期間／Class period	2018/10/01～2019/03/31		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//1.0
時間割コード／Time schedule code	20185503133006	科目番号／Subject code	55031330
科目ナンバリングコード／Numbering Code	BMMP 53142_782		
授業科目名／Subject	Chemistry of Biofunctional Molecules II／Chemistry of Biofunctional Molecules for Infectious Diseases II		
編集担当教員／Professor in charge of putting together the course syllabus	山吉　麻子／Yamayoshi Asako		
授業担当教員名（科目責任者）／Professor in charge of the subject	山吉　麻子／Yamayoshi Asako		
授業担当教員名（オムニバス科目等）／Professor(s)	山吉　麻子／Yamayoshi Asako		
科目分類／Class type	講義科目（区分D），特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	〔薬学〕本館４階セミナー室／Pharmaceutical School 4th floor seminar room		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	asakoy@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Chemistry of Biofunctional Molecules		
担当教員TEL/Tel	095-819-2438		
担当教員オフィスアワー/Office hours	12:00-18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To study and discuss about scientific technology for functional analysis of proteins and nucleic acids.		
授業到達目標/Course goals	To understand about scientific technology for analysis of proteins and nucleic acids and their function.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy □汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness ■考えをやり取りする力／Ability to exchange ideas ■国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Report (50%), Aggressiveness (50%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Proteins, Nucleic acids, Drugs		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Scientific journals, Printed matters		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)			
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
1st	Functional outline and detection techniques of biogenic proteins
2nd	Analytical technology of proteins and its applications (1)
3rd	Analytical technology of proteins and its applications (2)
4th	Functional outline and modification techniques of biogenic nucleic acids
5th	Analytical technology of nucleic acids and its applications

6th	Analytical technology of nucleic acids and its applications (2)
7th	Nucleic acid and protein drugs for treatment of cancers and infectious diseases
8th	Discussion of lecture

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	金／Fri 2
開講期間／Class period	2018/10/01～2019/03/31		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//1.0
時間割コード／Time schedule code	20185503171002	科目番号／Subject code	55031710
科目ナンバリングコード／Numbering Code	BMMP 51442_781		
授業科目名／Subject	Pharmaceutical Organic Chemistry II／Pharmaceutical Organic Chemistry for Infectious Diseases II		
編集担当教員／Professor in charge of putting together the course syllabus	石原 淳／Ishihara Jun, 福田 隼／Hayato Fukuda		
授業担当教員名（科目責任者）／Professor in charge of the subject	石原 淳／Ishihara Jun		
授業担当教員名（オムニバス科目等）／Professor(s)	石原 淳／Ishihara Jun, 福田 隼／Hayato Fukuda		
科目分類／Class type	講義科目（区分D）, 特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	〔薬学〕本館３階セミナー室／Pharmaceutical School 3rd floor seminar room		
対象学生（クラス等） /Target students	Master course		
担当教員Eメールアドレス/E-mail address	jishi@nagasaki-u.ac.jp, hfukuda@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Pharmaceutical Organic Chemistry		
担当教員TEL/Tel	819-2426 (Ishihara), 819-2427 (fukuda)		
担当教員オフィスアワー/Office hours	Mon-Fri 13:00-18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To attain the ability to properly access the databases and read journals and books to get the information required for the synthetic studies.		
授業到達目標/Course goals	(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.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy ■汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness □考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Understanding (100%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word			
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Journals (JACS, JOC, OL, TL, Angew.Chem.Int.Ed., Chem.Commun, etc)		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006 （FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

1st	Drug candidates and their syntheses (Ishihara)
2nd	Drug candidates and their syntheses (Ishihara)
3rd	Drug candidates and their syntheses (Ishihara)
4th	Drug candidates and their syntheses (Ishihara)
5th	Drug candidates and their syntheses (Fukuda)
6th	Drug candidates and their syntheses (Fukuda)
7th	Drug candidates and their syntheses (Fukuda)
8th	Drug candidates and their syntheses (Fukuda)

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	金／Fri 2
開講期間／Class period	2018/10/01～2019/03/31		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//0.5
時間割コード／Time schedule code	20185503180004	科目番号／Subject code	55031800
科目ナンバリングコード／Numbering Code	BMMP 52222_785		
授業科目名／Subject	Resources of Marine Natural Medicines／Resources of Marine Natural Medicines for Infectious Diseases		
編集担当教員／Professor in charge of putting together the course syllabus	山田 耕史／Yamada Koji		
授業担当教員名（科目責任者）／Professor in charge of the subject	山田 耕史／Yamada Koji		
授業担当教員名（オムニバス科目等）／Professor(s)	山田 耕史／Yamada Koji		
科目分類／Class type	講義科目（区分D），特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	薬用植物園２階セミナー室／Medical Plants Garden 2nd floor seminar room		
対象学生（クラス等） /Target students	Master course		
担当教員Eメールアドレス/E-mail address	kyamada@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Medicinal Plant Biochemistry		
担当教員TEL/Tel	095-819-2462		
担当教員オフィスアワー/Office hours	Monday 13:00-14:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To teach the marine natural medicines for infectious diseases		
授業到達目標/Course goals	To understand and to be able to summarize underlying marine natural medicines		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	□主体性／Autonomy □汎用的能力／Generic Competence □倫理観／Ethics ■多様性の理解／Understanding Diversity □協働性／Cooperativeness □考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	□A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above ■F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	The achievement level of the above-mentioned target is evaluated by following standards. Report (80%) and Approach attitude to the problem of class (20%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review	none		
キーワード/Key word	Marine Natural Products, antimicrobial, antitumor, anti-inflammatory, analgesia, immunomodulation, allergy, anti-viral, antiplasmodial agents		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	none		
受講要件（履修条件）/Prerequisites, etc.	It is desirable to have learned the foundation of organic chemistry.		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006 （FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)	none		
学生へのメッセージ/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.		
授業計画詳細／Course Schedule			

回(日時)／Time(date and time)	授業内容／Contents
1	The possibilities of marine organisms for the medicinal sources (Yamada)
2	Materials for development of the medicine I Antimicrobial and anticancer drugs in clinical and preclinical trials (Yamada)
3	Materials for development of the medicine II Antiplasmodial marine natural products (Yamada)
4	Marine natural products for the tool of pharmacological studies (Yamada)

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	金／Fri 2
開講期間／Class period	2018/10/01～2019/03/31		
必修選択／Required/Elective class	選択／elective	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//0.5
時間割コード／Time schedule code	20185503181005	科目番号／Subject code	55031810
科目ナンバリングコード／Numbering Code	BMMP 52322_785		
授業科目名／Subject	Resources of Natural Medicines／Resources of Natural Medicines for Infectious Diseases		
編集担当教員／Professor in charge of putting together the course syllabus	真木　俊英／Maki Toshihide		
授業担当教員名（科目責任者）／Professor in charge of the subject	真木　俊英／Maki Toshihide		
授業担当教員名（オムニバス科目等）／Professor(s)	真木　俊英／Maki Toshihide		
科目分類／Class type	講義科目（区分D），特別コースの授業科目／NUPGP		
対象年次／Year	1, 2	講義形態／Class Form	講義／Lecture
教室／Class room	〔薬学〕本館５階リフレッシュルーム／Pharmaceutical School 5th floor refresh room		
対象学生（クラス等）　/Target students	1st and 2nd		
担当教員Eメールアドレス/E-mail address	maki@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Structure analysis for chemicals		
担当教員TEL/Tel	095-819-2465		
担当教員オフィスアワー/Office hours	Please make an appointment.		
授業の概要及び位置づけ/Course overview and relationship to other subjects	Nuclear magnetic resonance (NMR) spectroscopy and Mass spectrometry are overviewed with some exercises and discuss about how to approach unknown phenomena.		
授業到達目標/Course goals	Understand important techniques for structure analysis with some important experimental parameters.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy ■汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness □考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Report (40%), activity in the class (40%), exercise (20%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	nmr, mass spectrimety, instrumental analysis, organic chemistry		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Organic structure from 2D NMR Spectra, Understanding mass spectra		
受講要件（履修条件）/Prerequisites, etc.	Basic knowledge of organic chemistry		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	Find out available resources for research.		
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

1st	Reviews on various approaches for structure analysis.
2nd	Basics of nuclear magnetic resonance spectrometry.
3rd	Basics of mass spectrometry.
4th	Structure analysis for unknown organic compounds.

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000A0	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Cell Regulation／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	武田　弘資／Takeda Kohsuke, 谷村　進／Tanimura Susumu		
授業担当教員名（科目責任者）／Professor in charge of the subject	武田　弘資／Takeda Kohsuke		
授業担当教員名（オムニバス科目等）／Professor(s)	武田　弘資／Takeda Kohsuke, 谷村　進／Tanimura Susumu		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	takeda-k@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Cell Regulation		
担当教員TEL/Tel	095-819-2417		
担当教員オフィスアワー/Office hours	At any time by e-mail		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To learn the approaches to elucidate the mechanisms of intracellular signal transduction regulating various cellular functions.		
授業到達目標/Course goals	To understand research articles in English and to acquire how to present and discuss scientific data.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	□A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Presentation and discussion skills.		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	signal transduction, cell signaling, stress response, cancer, metabolism, mitochondria		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Scientific journals		
受講要件（履修条件）/Prerequisites, etc.	None		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
1st	Lecture on how to use databases and collect information

2nd	Select an original article that is related to your research and summarize, report and discuss the results of the article. (1)
3rd	Select an original article that is related to your research and summarize, report and discuss the results of the article. (2)
4th	Select an original article that is related to your research and summarize, report and discuss the results of the article. (3)
5th	Select an original article that is related to your research and summarize, report and discuss the results of the article. (4)
6th	Select an original article that is related to your research and summarize, report and discuss the results of the article. (5)
7th	Select an original article that is related to your research and summarize, report and discuss the results of the article. (6)
8th	Select an original article that is related to your research and summarize, report and discuss the results of the article. (7)
9th	Select an original article that is related to your research and summarize, report and discuss the results of the article. (8)
10th	Select an original article that is related to your research and summarize, report and discuss the results of the article. (9)
11th	Select an original article that is related to your research and summarize, report and discuss the results of the article. (10)
12th	Select an original article that is related to your research and summarize, report and discuss the results of the article. (11)
13th	Select an original article that is related to your research and summarize, report and discuss the results of the article. (12)
14th	Select an original article that is related to your research and summarize, report and discuss the results of the article. (13)
15th	Select an original article that is related to your research and summarize, report and discuss the results of the article. (14)

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010C0	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Cell Regulation／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	武田　弘資／Takeda Kohsuke, 谷村　進／Tanimura Susumu		
授業担当教員名（科目責任者）／Professor in charge of the subject	武田　弘資／Takeda Kohsuke		
授業担当教員名（オムニバス科目等）／Professor(s)	武田　弘資／Takeda Kohsuke, 谷村　進／Tanimura Susumu		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	takeda-k@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Cell Regulation		
担当教員TEL/Tel	095-819-2417		
担当教員オフィスアワー/Office hours	At any time by e-mail		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To learn the approaches to elucidate the mechanisms of intracellular signal transduction regulating various cellular functions.		
授業到達目標/Course goals	To plan and perform appropriate experiments independently to obtain data for publication in scientific journals.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	□A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Technical and scientific achievements.		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	signal transduction, cell signaling, stress response, cancer, metabolism, mitochondria		
教科書・教材・参考書/Textbook,Teaching material,and Reference book			
受講要件（履修条件）/Prerequisites, etc.	None		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
1st	Select a research subject and make strategies for it.

2nd	Perform experiments and analyze the data from them.
3rd	Summarize the experimental results and discuss them.
4th	Present the results at a scientific meeting.

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000A1	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Pharmacology and Therapeutic Innovation／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	植田　弘師／Ueda Hiroshi, 塚原　完／Tsukahara Tamotsu		
授業担当教員名（科目責任者）／Professor in charge of the subject	植田　弘師／Ueda Hiroshi		
授業担当教員名（オムニバス科目等）／Professor(s)	植田　弘師／Ueda Hiroshi, 塚原　完／Tsukahara Tamotsu		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	ueda@nagasaki-u.ac.jp ttamotsu@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Pharmacology and Therapeutic Innovation		
担当教員TEL/Tel	095-819-2421 095-819-2473		
担当教員オフィスアワー/Office hours	Wed.12:00-12:50 (Accept any question by e-mail)		
授業の概要及び位置づけ/Course overview and relationship to other subjects	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.		
授業到達目標/Course goals	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.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Logical explanation and discussion (100%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word			
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Research Journals (Nature, Nature Medicine, Nature Neuroscience, Science, Cell, PNAS, J.Neuroscience)		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
1st	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Ueda)
2nd	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Ueda)
3rd	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Ueda)
4th	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Ueda)
5th	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Tsukahara)
6th	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Tsukahara)
7th	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Tsukahara)
8th	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Tsukahara)

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010C1	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Pharmacology and Therapeutic Innovation／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	植田　弘師／Ueda Hiroshi, 塚原　完／Tsukahara Tamotsu		
授業担当教員名（科目責任者）／Professor in charge of the subject	植田　弘師／Ueda Hiroshi		
授業担当教員名（オムニバス科目等）／Professor(s)	植田　弘師／Ueda Hiroshi, 塚原　完／Tsukahara Tamotsu		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	ueda@nagasaki-u.ac.jp ttamotsu@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Pharmacology and Therapeutic Innovation		
担当教員TEL/Tel	095-819-2421 095-819-2473		
担当教員オフィスアワー/Office hours	Wed.12:00-12:50 (Accept any question by e-mail)		
授業の概要及び位置づけ/Course overview and relationship to other subjects	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.		
授業到達目標/Course goals	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.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Logical explanation and discussion (100%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word			
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Research Journals (Nature, Nature Medicine, Nature Neuroscience, Science, Cell, PNAS, J.Neuroscience)		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			

学生へのメッセージ/Message for students	
授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
1st	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Ueda)
2nd	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Ueda)
3rd	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Ueda)
4th	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Ueda)
5th	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Tsukahara)
6th	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Tsukahara)
7th	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Tsukahara)
8th	Comprehend original and review articles in molecular pharmacology area, and present the contents such as introduction, methods, results and discussion using PowerPoint slides. (Tsukahara)

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000A2	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Pharmaceutical Chemistry／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	田中　正一／Tanaka Masakazu, 大庭　誠／Oba Makoto, 上田　篤志／Ueda Atsushi		
授業担当教員名（科目責任者）／Professor in charge of the subject	田中　正一／Tanaka Masakazu		
授業担当教員名（オムニバス科目等）／Professor(s)	田中　正一／Tanaka Masakazu, 大庭　誠／Oba Makoto, 上田　篤志／Ueda Atsushi		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	matanaka@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Pharmaceutical Chemistry		
担当教員TEL/Tel	095-819-2423		
担当教員オフィスアワー/Office hours	Tuesday 16:00-18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To profound the specialized knowledge and follow the frontier of relevant research field through literature reading and presentation at the group meeting.		
授業到達目標/Course goals	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.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　□汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Reading ability and presentation skill (100%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	literature, presentation		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Scientific journals in English		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	Not only understanding the content of journal, but also presentation skill are important.		
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		
	Introduction on literature searching		

	Introduction on literature searching
	Lecture how to search scientific articles and how to search synthesis of target molecules
	Lecture how to search scientific articles and how to search synthesis of target molecules
	Lecture how to search scientific articles and how to search synthesis of target molecules
	Lecture how to search scientific articles and how to search synthesis of target molecules
	Present original research literature papers relating to the research topic of him/herself and discuss
	Present original research literature papers relating to the research topic of him/herself and discuss
	Present original research literature papers relating to the research topic of him/herself and discuss
	Present original research literature papers relating to the research topic of him/herself and discuss
	Present original research literature papers relating to the research topic of him/herself and discuss
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	Present original research literature papers relating to the research topic of him/herself and discuss

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010C2	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Pharmaceutical Chemistry／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	田中　正一／Tanaka Masakazu, 大庭　誠／Oba Makoto		
授業担当教員名（科目責任者）／Professor in charge of the subject	田中　正一／Tanaka Masakazu		
授業担当教員名（オムニバス科目等）／Professor(s)	田中　正一／Tanaka Masakazu, 大庭　誠／Oba Makoto		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	matanaka@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Pharmaceutical Chemistry		
担当教員TEL/Tel	095-819-2423		
担当教員オフィスアワー/Office hours	Tuesday 16:00-18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To learn the fundamental experimental manipulations and techniques.		
授業到達目標/Course goals	Can carry out the routine experiments independently, and can summarize and present the experimental results.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　□汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading			
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word			
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Scientific journals		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	Discussions on experimental results are important.		
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

	A research subject will be disccussed and assigned to each student.
	Learning about the structure and function of bioorganic molecules, and discussion with the advisor to get the research plan settled.
	Literature searching for the reported work that may be related to the research subject or that may be referred in carrying out the research plan.
	A possible revision of the research plan is made on the basis of the literature searching if necessary.
	Search for references relating synthesis of the target molecule.
	Creation of the synthetic plan for the target molecule.
	The students are required to master the fundamental techniques for doing synthetic organic experiments.
	Isolation and structural characterization of the synthetic intermediates I.
	Isolation and structural characterization of the synthetic intermediates II.
	Separation and structural determination of the functional molecule I.
	Separation and structural determination of the functional molecule II.
	Instrumental experiments on the properties of the functional target molecule.
	Summarizing the research results and presenting at the group meeting.
	Preparation of manuscripts for publication I.
	Preparation of manuscripts for publication II.

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000A3	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Pharmaceutical Organic Chemistry／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	石原 淳／Ishihara Jun, 福田 隼／Hayato Fukuda		
授業担当教員名（科目責任者）／Professor in charge of the subject	石原 淳／Ishihara Jun		
授業担当教員名（オムニバス科目等）／Professor(s)	石原 淳／Ishihara Jun, 福田 隼／Hayato Fukuda		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等） /Target students	Master course		
担当教員Eメールアドレス/E-mail address	jishi@nagasaki-u.ac.jp, hfukuda@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Pharmaceutical Organic Chemistry		
担当教員TEL/Tel	819-2426 (Ishihara), 819-2427 (Fukuda)		
担当教員オフィスアワー/Office hours	Mon-Fri 13:00-18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To attain the ability to properly access the databases and read journals and books to get the information required for the synthetic studies.		
授業到達目標/Course goals	(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.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy □汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness □考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Understanding (100%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word			
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Journals (JACS, JOC, OL, TL, Angew.Chem.Int.Ed., Chem.Commun, etc)		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006 （FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

1st	Learn how to get proper journals and books using databases.
2nd	Learn how to utilize the information obtained for carrying out the synthetic studies.
3rd	Present the subjects on synthetic chemistry from the up-to-date journals and books and discuss the topics in the class. Contents above (1st-3rd) are repeated.

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0，日／Sun 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010C3	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Pharmaceutical Organic Chemistry／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	石原　淳／Ishihara Jun，福田　隼／Hayato Fukuda		
授業担当教員名（科目責任者）／Professor in charge of the subject	石原　淳／Ishihara Jun		
授業担当教員名（オムニバス科目等）／Professor(s)	石原　淳／Ishihara Jun，福田　隼／Hayato Fukuda		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1，2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	jishi@nagasaki-u.ac.jp，hfukuda@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Pharmaceutical Organic Chemistry		
担当教員TEL/Tel	819-2426 (Ishihara)，829-2427 (Fukuda)		
担当教員オフィスアワー/Office hours	Mon-Fri 13:00-18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To attain the ability to construct the target molecules.		
授業到達目標/Course goals	(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.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　□汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　■協働性／Cooperativeness　□考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Thesis (100%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	organic chemistry, organic synthesis, natural product		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Journals (JACS, JOC, OL, TL, Angew.Chem.Int.Ed., Chem.Commun, etc)		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			
授業計画詳細／Course Schedule			

回(日時)／Time(date and time)	授業内容／Contents
1st	Collect the information concerning the target molecule by searching the databases and reading journals, and then make synthetic plans.
2nd	Determine one synthetic route by the evaluation of the above-mentioned synthetic plans.
3rd	Construct the required key intermediates.
4th	Present the progress report in the group seminar and discuss the results.
5th	Combine the intermediates prepared together to get the advanced intermediates.
6th	Achieve the synthesis of the target molecule and confirm the structure by spectroscopic analyses.
7th	Present the final report in the group seminar and discuss the results.
8th	Prepare a manuscript of the synthetic work for publication.
9th	Prepare a thesis on the synthetic work.

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000A4	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Chemistry for Pharmaceuticals／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	尾野村　治／Onomura Osamu, 栗山　正巳／Kuriyama Masami		
授業担当教員名（科目責任者）／Professor in charge of the subject	尾野村　治／Onomura Osamu		
授業担当教員名（オムニバス科目等）／Professor(s)	尾野村　治／Onomura Osamu, 栗山　正巳／Kuriyama Masami		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	st, 2nd		
担当教員Eメールアドレス/E-mail address	onomura@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Synthetic Chemistry for Pharmaceuticals		
担当教員TEL/Tel	095-819-2429		
担当教員オフィスアワー/Office hours	Mon. - Fri. 10:30 - 18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	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.		
授業到達目標/Course goals	You can extract useful research articles by data bases and get necessary original papers. Furthermore, you can understand the contents of the literatures.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Understanding of research articles (100%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Search for academic literatures, Summarization of literatures, Presentation		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Academic journals （JACS, JOC, OL, Tetrahedron Letters, Angew. Chem. Int. Ed., Chem. Commun. Etc.）		
受講要件（履修条件）/Prerequisites, etc.	None		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	In advance, read carefully more than three original papers.		
授業計画詳細／Course Schedule			

回(日時)／Time(date and time)	授業内容／Contents
1	Lecture on search skills of data bases (Scifinder, Beilstein).(Onomura & Kuriyama)
2	Lecture about methods to get original articles.(O & K)
3	Introducing one original literature related to your research, and discussion of the content (1) (O & K)
4	Introducing one original literature related to your research, and discussion of the content (2) (O & K)
5	Introducing one original literature related to your research, and discussion of the content (3) (O & K)
6	Introducing one original literature related to your research, and discussion of the content (4) (O & K)
7	Introducing one original literature related to your research, and discussion of the content (5) (O & K)
8	Introducing one original literature related to your research, and discussion of the content (6) (O & K)
9	Introducing one original literature related to your research, and discussion of the content (7) (O & K)
10	Introducing one original literature related to your research, and discussion of the content (8) (O & K)
11	Introducing one original literature related to your research, and discussion of the content (9) (O & K)
12	Introducing one original literature related to your research, and discussion of the content (10) (O & K)
13	Introducing one original literature related to your research, and discussion of the content (11) (O & K)
14	Introducing one original literature related to your research, and discussion of the content (12) (O & K)
15	Introducing one original literature related to your research, and discussion of the content (13) (O & K)

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010C4	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Chemistry for Pharmaceuticals／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	尾野村　治／Onomura Osamu, 栗山　正巳／Kuriyama Masami		
授業担当教員名（科目責任者）／Professor in charge of the subject	尾野村　治／Onomura Osamu		
授業担当教員名（オムニバス科目等）／Professor(s)	尾野村　治／Onomura Osamu, 栗山　正巳／Kuriyama Masami		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	1st, 2nd		
担当教員Eメールアドレス/E-mail address	onomura@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Synthetic Chemistry for Pharmaceuticals		
担当教員TEL/Tel	095-819-2429		
担当教員オフィスアワー/Office hours	Mon. - Fri. 10:30 - 18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	You learn how to do experiment to get new and fruitful results in synthetic organic chemistry directed toward medicinal chemistry.		
授業到達目標/Course goals	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 control.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Completion of research articles (100%).		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Synthetic methods, Analysis of reaction mechanism, Comparison of experimental results		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Academic journals （JACS, JOC, OL, Tetrahedron Letters, Angew. Chem. Int. Ed., Chem. Commun. etc.）, Data bases (Scifinder, Beilstein)		
受講要件（履修条件）/Prerequisites, etc.	None		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	In advance, master basic knowledge of organic chemistry.		
授業計画詳細／Course Schedule			

回(日時)／Time(date and time)	授業内容／Contents
1	Search data bases to extract academic articles, and Read the articles to get information for preparation of target molecules.
2	Design new synthetic routes and plan synthetic experiment. (O & K)
3	Search and read academic articles related to the new routes. (O & K)
4	Analysis of obtained information and determination of reasonable 3 synthetic routes. (O & K)
5	Experiment of the 1st synthetic route. (O & K)
6	Experiment of the 2nd synthetic route. (O & K)
7	Experiment of the 3rd synthetic route. (O & K)
8	Comparison of experimental results by methods 1-3 (O & K)
9	Presentation of research results to select the best method. (O & K)
10	Generality of selected synthetic method. (O & K)
11	Measurement of physical data. (O & K)
12	Experiments for analysis of reaction mechanism. (O & K)
13	Summarization of research results for presentation in a symposium. (O & K)
14	Presentation of research results in a symposium. (O & K)
15	Preparation of a manuscript to contributable to a journal. (O & K)

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000A5	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Genome-based Drug Discovery／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	岩田　修永／Iwata Nobuhisa, 城谷　圭朗／Shirotani Keiro		
授業担当教員名（科目責任者）／Professor in charge of the subject	岩田　修永／Iwata Nobuhisa		
授業担当教員名（オムニバス科目等）／Professor(s)	岩田　修永／Iwata Nobuhisa, 城谷　圭朗／Shirotani Keiro		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	1,2		
担当教員Eメールアドレス/E-mail address	iwata-n@nagasaki-u.ac.jp, keiroshiro@nagasaki-u.ac.jp, asai@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Gene-based Drug Discovery		
担当教員TEL/Tel	095-819-2435 (Iwata), 095-819-2436 (Shirotani), 095-819-2437 (Asai)		
担当教員オフィスアワー/Office hours	Mon-Fri. 13:00-17:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	Training search, selection and evaluation of information, and enhancing own problem-solving abilities		
授業到達目標/Course goals	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.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Active participation 80%, and achievement 20%		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review	Preparation: It is necessary to get a better understanding by reading references and related review articles in the paper you selected. Review: Re-examine something pointed out by lecturers or raised by discussion, and make sure your understanding.		
キーワード/Key word	Alzheimer's disease, pathogenesis, enzyme, recombinant DNA technology, animal model, drug discovery, development of early diagnostic method		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Journals (J Biol Chem, J Neurosci, Neuron, Nature & its sister journals, Science, Cell & its sister journals, etc.), Alzheimer Forum (http://www.alzforum.org/)		
受講要件（履修条件）/Prerequisites, etc.	None		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	professional training		

授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
1	Search appropriate information necessary for own research theme using PubMed and so on.
2	Select appropriate information from overflowing ones.
3	Peruse papers published in scientific journals.
4	Find out fundamental problem in own research field, and discuss it with instructors.
5	Find appropriate avenues to resolve the facing problem.
6	Search appropriate information necessary for own research theme using PubMed and so on.
7	Select appropriate information from overflowing ones.
8	Peruse papers published in scientific journals.
9	Find out fundamental problem in own research field, and discuss it with instructors.
10	Find appropriate avenues to resolve the facing problem.
11	Search appropriate information necessary for own research theme using PubMed and so on.
12	Select appropriate information from overflowing ones.
13	Peruse papers published in scientific journals.
14	Find out fundamental problem in own research field, and discuss it with instructors.
15	Find appropriate avenues to resolve the facing problem.
16	Search appropriate information necessary for own research theme using PubMed and so on.
17	Select appropriate information from overflowing ones.
18	Peruse papers published in scientific journals.
19	Find out fundamental problem in own research field, and discuss it with instructors.
20	Find appropriate avenues to resolve the facing problem.
21	Search appropriate information necessary for own research theme using PubMed and so on.
22	Select appropriate information from overflowing ones.
23	Peruse papers published in scientific journals.
24	Find out fundamental problem in own research field, and discuss it with instructors.
25	Find appropriate avenues to resolve the facing problem.
26	Search appropriate information necessary for own research theme using PubMed and so on.
27	Select appropriate information from overflowing ones.
28	Peruse papers published in scientific journals.
29	Find out fundamental problem in own research field, and discuss it with instructors.
30	Find appropriate avenues to resolve the facing problem.
31	general overview 1
32	general overview 2

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010C5	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Genome-based Drug Discovery／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	岩田　修永／Iwata Nobuhisa, 城谷　圭朗／Shirotani Keiro		
授業担当教員名（科目責任者）／Professor in charge of the subject	岩田　修永／Iwata Nobuhisa		
授業担当教員名（オムニバス科目等）／Professor(s)	岩田　修永／Iwata Nobuhisa, 城谷　圭朗／Shirotani Keiro		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	1,2		
担当教員Eメールアドレス/E-mail address	iwata-n@nagasaki-u.ac.jp, keiroshiro@nagasaki-u.ac.jp, asai@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Gene-based Drug Discovery		
担当教員TEL/Tel	095-819-2435 (Iwata), 095-819-2436 (Shirotani), 095-819-2437 (Asai)		
担当教員オフィスアワー/Office hours	Mon-Fri. 13:00-17:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	Designing an experimental plan to solve the problems, training experimental techniques, and evaluating obtained results.		
授業到達目標/Course goals	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.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Active participation 80%, and achievement 20%		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review	Preparation: It is necessary to read papers, textbooks and operating manuals for instruments and construct your working hypothesis and prepare detailed experimental protocol. Review: Evaluate and discuss the data you obtained. Make a thorough review of the points put forth by instructors.		
キーワード/Key word	Alzheimer's disease, pathogenesis, enzyme, recombinant DNA technology, animal model, drug discovery, development of early diagnostic method		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Journals (JBC, J Neurosci, Neuron, Nature & its sister journals, Science, Cell & its sister journals, etc.) and Alzheimer Forum (http://www.alzforum.org/).		
受講要件（履修条件）/Prerequisites, etc.	None		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	Professional training		
授業計画詳細／Course Schedule			

回(日時)／Time(date and time)	授業内容／Contents
1-20	molecular biological experiments
21-40	cell biological experiments
41-60	biochemical & enzymological experiments
61-80	histochemical experiments
81-108	animal experiments
108-128	statistics and data analysis

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	他／Others 0, 日／Sun 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000A6	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Molecular Pharmacology of infectious Agents／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	北里　海雄／Kitazato Kaio, 春山　貴弘／Haruyama Takahiro		
授業担当教員名（科目責任者）／Professor in charge of the subject	北里　海雄／Kitazato Kaio		
授業担当教員名（オムニバス科目等）／Professor(s)	北里　海雄／Kitazato Kaio, 春山　貴弘／Haruyama Takahiro		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	kkholi@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Molecular Pharmacology of infectious Agents		
担当教員TEL/Tel	095-819-2457		
担当教員オフィスアワー/Office hours	Any time but need apointment		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To learn the nature of infectious agents		
授業到達目標/Course goals	Be able to understand English articles and recognize nature of infectious agents.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy ■汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness ■考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Report		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Bacteria, Virus, Infectious Diseases		
教科書・教材・参考書/Textbook,Teaching material,and Reference book			
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)			
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule

回(日時)／Time(date and time)	授業内容／Contents
1st	Introduction to basic bacteriology
2nd	Current topics in molecular bacteriology I
3rd	Current topics in molecular bacteriology II
4th	Current topics in molecular bacteriology III
5th	Current topics in molecular bacteriology IV
6th	Current topics in gut microbiota I

7th	Current topics in gut microbiota II
8th	Current topics in gut microbiota III
9th	Current topics in gut microbiota IV
10th	Current topics in gut microbiota V
11st	Introduction to basic Virology
12th	Current topics in molecular Virology I
13th	Current topics in molecular Virology II
14th	Current topics in molecular Virology III
15th	Current topics in molecular Virology IV
16th	Current topics in antiviral therapy I
17th	Current topics in antiviral therapy II
18th	Current topics in antiviral therapy III
19th	Current topics in antiviral therapy IV
20th	Current topics in antiviral therapy V
21st	Introduction to infectious diseases
22th	Introduction to strategies for anti-infectious diseases
23th	Introduction to current technologies against infectious diseases
24th	Current status and future prospective of vaccine development against infectious diseases I
25th	Current status and future prospective of vaccine development against infectious diseases II
26th	Current applications and future prospective of CRISPR/Cas technology against infectious diseases I
27th	Current applications and future prospective of CRISPR/Cas technology against infectious diseases II
28th	Current applications and future prospective of CRISPR/Cas technology against infectious diseases III
29th	Future perspective of antimicrobial therapy
30th	Future perspective of antiviral therapy

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	他／Others 0, 日／Sun 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010C6	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Molecular Pharmacology of infectious Agents／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	北里　海雄／Kitazato Kaio, 春山　貴弘／Haruyama Takahiro		
授業担当教員名（科目責任者）／Professor in charge of the subject	北里　海雄／Kitazato Kaio		
授業担当教員名（オムニバス科目等）／Professor(s)	北里　海雄／Kitazato Kaio, 春山　貴弘／Haruyama Takahiro		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	kkholi@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Molecular Pharmacology of infectious Agents		
担当教員TEL/Tel	095-819-2457		
担当教員オフィスアワー/Office hours	Any time but need apointment		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To learn the nature of infectious agents.		
授業到達目標/Course goals	Be able to understand English articles and recognize nature of infectious agents.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	□主体性／Autonomy □汎用的能力／Generic Competence ■倫理観／Ethics □多様性の理解／Understanding Diversity ■協働性／Cooperativeness ■考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Report		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Bacteria, Virus, gut microbiome, Infectious Diseases		
教科書・教材・参考書/Textbook,Teaching material,and Reference book			
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)			
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule

回(日時)／Time(date and time)	授業内容／Contents
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

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000A7	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Natural Product Chemistry／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	田中　隆／Tanaka Takashi，齋藤　義紀／Saito Yoshinori，松尾　洋介／Matsuo Yosuke		
授業担当教員名（科目責任者）／Professor in charge of the subject	田中　隆／Tanaka Takashi		
授業担当教員名（オムニバス科目等）／Professor(s)	田中　隆／Tanaka Takashi，齋藤　義紀／Saito Yoshinori, 松尾　洋介／Matsuo Yosuke		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1，2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	NUPGP		
担当教員Eメールアドレス/E-mail address	t-tanaka@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Natural Product Chemistry		
担当教員TEL/Tel	095-819-2432		
担当教員オフィスアワー/Office hours	Accepted by e-mail		
授業の概要及び位置づけ/Course overview and relationship to other subjects	The aim is to understand biosynthesis, clssification,separation, structure determination, functions and biological activities, and practical application of natural products.		
授業到達目標/Course goals	To explain the biosynthesis and functions of typical Natural Products.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	□主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　□考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	report(20%), attendance(80%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	separation of natural products, secondary metabolites, polyphenols, spectroscopic methods		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	reference book: Dewick, Medicinal Natural Product Chemistry		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)	http://www.ph.nagasaki-u.ac.jp/lab/natpro/index-j.html		
学生へのメッセージ/Message for students			
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

1st	Biosynthesis of natural products
2nd	Separation and structure determination
3rd	Structures and functions of polyphenols
4th	Reactions and synthesis of polyphenols
5th	Medicines derived from natural products
6th	Tea chemistry
7th	Structure and reactions of flavonoids
8th	Structure and functions of various pigments

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010C7	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Natural Product Chemistry／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	田中　隆／Tanaka Takashi, 齋藤　義紀／Saito Yoshinori, 松尾　洋介／Matsuo Yosuke		
授業担当教員名（科目責任者）／Professor in charge of the subject	田中　隆／Tanaka Takashi		
授業担当教員名（オムニバス科目等）／Professor(s)	田中　隆／Tanaka Takashi, 齋藤　義紀／Saito Yoshinori, 松尾　洋介／Matsuo Yosuke		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	NUPGP		
担当教員Eメールアドレス/E-mail address	t-tanaka@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Natural Product Chemistry		
担当教員TEL/Tel	095-819-2432		
担当教員オフィスアワー/Office hours	Accepted by E-mail		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To learn the fundamental experimental techniques for natural product chemistry.		
授業到達目標/Course goals	Can carry out the routine experiments independently, and can summarize and present the experimental results.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	□主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　□考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Presentation		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Extraction, chromatography, spectroscopy, NMR, MS.		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Scientific journals		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)	http://www.ph.nagasaki-u.ac.jp/lab/natpro/index-j.html		
学生へのメッセージ/Message for students			
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

1st	Literature search about the target plants
2nd	Extraction and chromatographic separation.
3rd	Structure determination of the isolated compounds
4th	Presentation

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000A8	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Medicinal Plant Biochemistry／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	山田　耕史／Yamada Koji		
授業担当教員名（科目責任者）／Professor in charge of the subject	山田　耕史／Yamada Koji		
授業担当教員名（オムニバス科目等）／Professor(s)	山田　耕史／Yamada Koji		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	kyamada@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Medicinal Plant Biochemistry		
担当教員TEL/Tel	095-819-2462		
担当教員オフィスアワー/Office hours	Monday 13:00-14:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	It is aimed to acquire the writing ability of English article for the publishing of the experimental papers as a scientific researcher.		
授業到達目標/Course goals	It is the goal to write logically the scientific articles without grammatical errors.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　□汎用的能力／Generic Competence　□倫理観／Ethics　■多様性の理解／Understanding Diversity　□協働性／Cooperativeness　□考えをやり取りする力／Ability to exchange ideas　■国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Understanding ability of English paper 50%, writing ability of English paper 50%		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Article search, English paper, Presentation		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	English journals, JACS, JOC, JNP etc		
受講要件（履修条件）/Prerequisites, etc.	none		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	Specialized instruction. Editing and logical consideration of the data, and in advance planning of the research experiment.		
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

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.
pth	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.

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010C8	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Medicinal Plant Biochemistry／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	山田　耕史／Yamada Koji		
授業担当教員名（科目責任者）／Professor in charge of the subject	山田　耕史／Yamada Koji		
授業担当教員名（オムニバス科目等）／Professor(s)	山田　耕史／Yamada Koji		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	kyamada@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Medicinal Plant Biochemistry		
担当教員TEL/Tel	095-819-2462		
担当教員オフィスアワー/Office hours	Monday 13:00-14:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	It is aimed to study how to perform the experiments of scientific theme, and to make the scientific paper in English		
授業到達目標/Course goals	It is the goal to independently make the experiment plan for the research, and to publish the research data into an academic journal.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　□汎用的能力／Generic Competence　□倫理観／Ethics　■多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Complete English paper and its thesis 100%		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review	none		
キーワード/Key word	Article, scientific English paper, Presentation		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Scientific journals:　ACS, JOC, JNP etc,　　Database:　SciFinder Scholar		
受講要件（履修条件）/Prerequisites, etc.	none		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	Specialized instruction. Editing and logical consideration of the data, and in advance planning of the research experiment.		
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

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.

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000A9	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Structure Analysis for Chemicals／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	真木　俊英／Maki Toshihide		
授業担当教員名（科目責任者）／Professor in charge of the subject	真木　俊英／Maki Toshihide		
授業担当教員名（オムニバス科目等）／Professor(s)	真木　俊英／Maki Toshihide		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	1st and 2nd		
担当教員Eメールアドレス/E-mail address	maki@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Structure analysis for chemicals		
担当教員TEL/Tel	095-819-2465		
担当教員オフィスアワー/Office hours	Please make an appointment.		
授業の概要及び位置づけ/Course overview and relationship to other subjects	Nuclear magnetic resonance (NMR) spectroscopy and Mass spectrometry are overviewed with some exercises and discuss about how to approach unknown phenomena.		
授業到達目標/Course goals	Understand important techniques for structure analysis with some important experimental parameters.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　□考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Report (30%), activity in the class (30%), exercise (40%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review	It is neccessary to keep curiosity to many things and read a variety of science journals.		
キーワード/Key word	nmr, mass spectrimety, instrumental analysis, organic chemistry		
教科書・教材・参考書/Textbook,Teaching material,and Reference book			
受講要件（履修条件）/Prerequisites, etc.	Basic knowledge of organic chemistry		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	Find out available resources for research.		
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

1st	Lecture on search skills of data bases (Scifinder, Beilstein).
2nd	Lecture about methods to get original articles.
3rd	Introducing one original literature related to your research, and discussion of the content (1)
4th	Introducing one original literature related to your research, and discussion of the content (2)
5th	Introducing one original literature related to your research, and discussion of the content (3)
6th	Introducing one original literature related to your research, and discussion of the content (4)
7th	Introducing one original literature related to your research, and discussion of the content (5)
8th	Introducing one original literature related to your research, and discussion of the content (6)
9th	Introducing one original literature related to your research, and discussion of the content (7)
10th	Introducing one original literature related to your research, and discussion of the content (8)
11th	Introducing one original literature related to your research, and discussion of the content (9)
12th	Introducing one original literature related to your research, and discussion of the content (10)
13th	Introducing one original literature related to your research, and discussion of the content (11)
14th	Introducing one original literature related to your research, and discussion of the content (12)
15th	Introducing one original literature related to your research, and discussion of the content (13)

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010C9	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Structure Analysis for Chemicals／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	真木　俊英／Maki Toshihide		
授業担当教員名（科目責任者）／Professor in charge of the subject	真木　俊英／Maki Toshihide		
授業担当教員名（オムニバス科目等）／Professor(s)	真木　俊英／Maki Toshihide		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	1st and 2nd		
担当教員Eメールアドレス/E-mail address	maki@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Structure analysis for chemicals		
担当教員TEL/Tel	095-819-2465		
担当教員オフィスアワー/Office hours	Please make an appointment.		
授業の概要及び位置づけ/Course overview and relationship to other subjects	Nuclear magnetic resonance (NMR) spectroscopy and Mass spectrometry are overviewed with some exercises and discuss about how to approach unknown phenomena.		
授業到達目標/Course goals	Understand important techniques for structure analysis with some important experimental parameters.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy ■汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness □考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Report (30%), activity in the class (30%), exercise (40%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review	Read a variety of reseach reports.		
キーワード/Key word	nmr, mass spectrimety, instrumental analysis, organic chemistry		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	research articles related your subject		
受講要件（履修条件）/Prerequisites, etc.	Basic knowledge of organic chemistry		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	Find out available resources for research.		
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

1st	Search data bases to extract academic articles which are related to your research subjects.
2nd	Read the articles to get information for preparation of target molecules.
3rd	Design synthetic routes and plan synthetic experiment.
4th	Experiment of the synthesis of the target molecules.
5th	Experiment of isolation of the target molecules form reaction mixture.
6th	Experiment of structure analysis of the molecule with instrumental analysis.
7th	Analysis of spectra and physical data of the molecule.
8th	Presentation of research results to select the best method.
9th	Logical consideration of structure function relationship.
10th	Preparation of analogs to search superior molecules.
11th	Assessment of the new functional molecule.
12th	Construction of screening methods with prepared device molecule.
13th	Summarization of research results for presentation in a symposium.
14th	Presentation of research results in a symposium.
15th	Preparation of a manuscript to contributable to a journal.

学期／Semester	2018年度／Academic Year 前期／First Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/09/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000B0	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Chemistry of Biofunctional Molecules／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	山吉　麻子／Yamayoshi Asako		
授業担当教員名（科目責任者）／Professor in charge of the subject	山吉　麻子／Yamayoshi Asako		
授業担当教員名（オムニバス科目等）／Professor(s)	山吉　麻子／Yamayoshi Asako		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等） /Target students	1, 2 and 3 year		
担当教員Eメールアドレス/E-mail address	asakoy@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Chemistry of Biofunctional molecules, 4th floor		
担当教員TEL/Tel	095-819-2438 (Yamayoshi)		
担当教員オフィスアワー/Office hours	AM 10:30-PM 18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To learn how to demonstrate about contents of scientific papers, and individual experimental data.		
授業到達目標/Course goals	To attain ability of solution about individual research problems.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy □汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness ■考えをやり取りする力／Ability to exchange ideas ■国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Presentation ability(30%), Discussion ability(30%), Aggressiveness(40%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Presentation		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Electronic dictionary, English-Japanese dictionary, Internet information		
受講要件（履修条件）/Prerequisites, etc.	none		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
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.
6th	Repeat above plans

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010D0	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Chemistry of Biofunctional Molecules／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	山吉 麻子／Yamayoshi Asako		
授業担当教員名（科目責任者）／Professor in charge of the subject	山吉 麻子／Yamayoshi Asako		
授業担当教員名（オムニバス科目等）／Professor(s)	山吉 麻子／Yamayoshi Asako		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等） /Target students	1, 2 and 3 year		
担当教員Eメールアドレス/E-mail address	asakoy@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Chemistry of Biofunctional molecules, 4th floor		
担当教員TEL/Tel	095-819-2438 (Yamayoshi)		
担当教員オフィスアワー/Office hours	AM 10:30-PM 18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To learn how to carry out experimets of scientific theme, and to get the positive data.		
授業到達目標/Course goals	To publish your research data as academic papers and to attain a matter degree.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy □汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness ■考えをやり取りする力／Ability to exchange ideas ■国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Reports		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Experiment		
教科書・教材・参考書/Textbook,Teaching material,and Reference book			
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006 （FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
1st	Getting information about individual themes

2nd	Making the plan for the research
3rd	Experiments
4th	Report of individual experimental data
5th	Repeat above plans

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000B1	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Hygienic Chemistry／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	中山　守雄／Nakayama Morio, 淵上　剛志／Fuchigami Takeshi, 吉田　さくら／Yoshida Sakura		
授業担当教員名（科目責任者）／Professor in charge of the subject	中山　守雄／Nakayama Morio		
授業担当教員名（オムニバス科目等）／Professor(s)	中山　守雄／Nakayama Morio, 淵上　剛志／Fuchigami Takeshi, 吉田　さくら／Yoshida Sakura		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	morio@nagasaki-u.ac.jp(Nakayama), t-fuchi@nagasaki-u.ac.jp(Fuchigami), Yoshida-s@nagasaki-u.ac.jp(Yoshida)		
担当教員研究室/Instructor office	Hygienic Chemistry		
担当教員TEL/Tel	095-819-2441(Nakayama), 095-819-2442(Fuchigami), 095-819-2443(Yoshida)		
担当教員オフィスアワー/Office hours	Monday－Friday 0:20－0:50 p.m. or by appointment		
授業の概要及び位置づけ/Course overview and relationship to other subjects	It is aimed to acquire the writing ability of English article for the publishing of the experimental papers as ascientific researcher		
授業到達目標/Course goals	It is the goal to write logically the scientific articles without grammatical errors		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　□考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	□A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Understanding ability of English paper 50%, writing ability of English paper 50%		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Article search, English paper, Presentation.		
教科書・教材・参考書/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.		
受講要件（履修条件）/Prerequisites, etc.	Nothing		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	Preparation of the English paper is required in advance.		
授業計画詳細／Course Schedule			

回(日時)／Time(date and time)	授業内容／Contents
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.

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010D1	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Hygienic Chemistry／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	中山　守雄／Nakayama Morio, 淵上　剛志／Fuchigami Takeshi, 吉田　さくら／Yoshida Sakura		
授業担当教員名（科目責任者）／Professor in charge of the subject	中山　守雄／Nakayama Morio		
授業担当教員名（オムニバス科目等）／Professor(s)	中山　守雄／Nakayama Morio, 淵上　剛志／Fuchigami Takeshi, 吉田　さくら／Yoshida Sakura		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	morio@nagasaki-u.ac.jp(Nakayama), t-fuchi@nagasaki-u.ac.jp(Fuchigami), yoshida-s@nagasaki-u.ac.jp(Yoshida)		
担当教員研究室/Instructor office	Hygienic Chemistry		
担当教員TEL/Tel	095-819-2441(Nakayama), 095-819-2442(Fuchigami), 095-819-2443(Yoshida)		
担当教員オフィスアワー/Office hours	Monday－Friday 0:20－0:50 p.m. or by appointment		
授業の概要及び位置づけ/Course overview and relationship to other subjects	It is aimed to study how to perform the experiments of scientific theme.		
授業到達目標/Course goals	It is the goal to independently make the experiment plan for the research		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　□考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	□A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Laboratory work (50%), Presentation and communication skill (50%),		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Strategy, Research, Presentation.		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Scientific journals, Database		
受講要件（履修条件）/Prerequisites, etc.	Nothing		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	Editing and logical consideration of the data, and in advance planning of the research experiment		
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

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

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000B2	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Analytical Chemistry／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	黒田 直敬／Naotaka Kuroda, 岸川 直哉／Kishikawa Naoya		
授業担当教員名（科目責任者）／Professor in charge of the subject	黒田 直敬／Naotaka Kuroda		
授業担当教員名（オムニバス科目等）／Professor(s)	黒田 直敬／Naotaka Kuroda, 岸川 直哉／Kishikawa Naoya		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等） /Target students	1, 2 and 3 year		
担当教員Eメールアドレス/E-mail address	n-kuro@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Analytical Chemistry, 5th floor		
担当教員TEL/Tel	095-819-2894 (Kuroda)		
担当教員オフィスアワー/Office hours	AM 10:30-PM 18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To learn how to demonstrate about contents of scientific papers, and individual experimental data.		
授業到達目標/Course goals	To attain ability of solution about individual research problems.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy □汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity □協働性／Cooperativeness ■考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Presentation ability(30%), Discussion ability(30%), Aggressiveness(40%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Presentation		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Electronic dictionary, English-Japanese dictionary, Internet information		
受講要件（履修条件）/Prerequisites, etc.	none		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006 （FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
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.
6th	Repeat above plans

学期／Semester	2018年度／Academic Year 後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010D2	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Analytical Chemistry／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	黒田　直敬／Naotaka Kuroda, 岸川　直哉／Kishikawa Naoya		
授業担当教員名（科目責任者）／Professor in charge of the subject	黒田　直敬／Naotaka Kuroda		
授業担当教員名（オムニバス科目等）／Professor(s)	黒田　直敬／Naotaka Kuroda, 岸川　直哉／Kishikawa Naoya		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	1, 2 and 3 year		
担当教員Eメールアドレス/E-mail address	n-kuro@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Analytical Chemistry, 5th floor		
担当教員TEL/Tel	095-819-2894 (Kuroda)		
担当教員オフィスアワー/Office hours	AM 10:30-PM 18:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To learn how to carry out experimets of scientific theme, and to get the positive data.		
授業到達目標/Course goals	To publish your research data as academic papers and to attain a matter degree.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy □汎用的能力／Generic Competence □倫理観／Ethics □多様性の理解／Understanding Diversity ■協働性／Cooperativeness □考えをやり取りする力／Ability to exchange ideas □国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	□A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Reports		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Experiment		
教科書・教材・参考書/Textbook,Teaching material,and Reference book			
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
1st	Getting information about individual themes

2nd	Making the plan for the research
3rd	Experiments
4th	Report of individual experimental data
5th	Repeat above plans

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000B3	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Pharmacotherapeutics／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	塚元　和弘／Tsukamoto Kazuhiro, 稲嶺　達夫／Inamine Tatsuo		
授業担当教員名（科目責任者）／Professor in charge of the subject	塚元　和弘／Tsukamoto Kazuhiro		
授業担当教員名（オムニバス科目等）／Professor(s)	塚元　和弘／Tsukamoto Kazuhiro, 稲嶺　達夫／Inamine Tatsuo		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	ktsuka@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Department of Pharmacotherapeutics		
担当教員TEL/Tel	095-819-8573		
担当教員オフィスアワー/Office hours	Monday-Friday 9:00-17:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To teach clinical and molecular genetics		
授業到達目標/Course goals	To understand the methods to identify the disease-susceptible and drug-responsible genes for multifactorial disorders, and an application to nucleic acids-based diagnosis		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	brief examination at each class (40%) and report (60%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review	Review what you learned.		
キーワード/Key word	genetic polymorphisms, association study, multifactorial disorders, nucleic acids-based diagnosis		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	none		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			

授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
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

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010D3	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Pharmacotherapeutics／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	塚元　和弘／Tsukamoto Kazuhiro, 稲嶺　達夫／Inamine Tatsuo		
授業担当教員名（科目責任者）／Professor in charge of the subject	塚元　和弘／Tsukamoto Kazuhiro		
授業担当教員名（オムニバス科目等）／Professor(s)	塚元　和弘／Tsukamoto Kazuhiro, 稲嶺　達夫／Inamine Tatsuo		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	Master course		
担当教員Eメールアドレス/E-mail address	ktsuka@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Department of Pharmacotherapeutics		
担当教員TEL/Tel	095-819-8573		
担当教員オフィスアワー/Office hours	Monday-Friday 9:00-17:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	To identify the disease-susceptible genes or drug-responsible genes by candidate gene-based association study		
授業到達目標/Course goals	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		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　□汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　■協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	□A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives ■C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Master ' s dissertation (100%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review	Review what you learned.		
キーワード/Key word	genetic polymorphisms, bioinformatics, association study, disease-susceptibility, drug responsibility		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	None		
受講要件（履修条件）/Prerequisites, etc.			
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students			
授業計画詳細／Course Schedule			
回(日時)／Time(date and time)	授業内容／Contents		

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

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0, 日／Sun 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000B4	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Pharmaceutical Informatics／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	川上　茂／Kawakami Shigeru, 萩森　政頼／Hagimori Masayori		
授業担当教員名（科目責任者）／Professor in charge of the subject	川上　茂／Kawakami Shigeru		
授業担当教員名（オムニバス科目等）／Professor(s)	川上　茂／Kawakami Shigeru, 萩森　政頼／Hagimori Masayori		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	1th, 2th		
担当教員Eメールアドレス/E-mail address	skawakam@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Pharmaceutical Informatics		
担当教員TEL/Tel	095-819-8563		
担当教員オフィスアワー/Office hours	9:00-17:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	This course provides fundamental skills in organizing and presentaing document on a particular topic regarding pharmaceutical informatics from scientific papers.【薬学教育モデル・コアカリキュラム一般目標】A 全学年を通して：ヒューマニズムについて学ぶ A(2)医療の担い手としてのこころ構え、C16 製剤化のサイエンス (3)DDS (Drug Delivery System: 薬物送達システム)、C17　医薬品の開発と生産(1)医薬品開発と生産の流れ、(3)バイオ医薬品とゲノム情報		
授業到達目標/Course goals	To understand the content of the scientific papers and find the relashionship between scientific papers and own research.薬学教育モデル・コアカリキュラム到達目標を含む項目：A-(2)【研究活動に求められるこころ構え】、C16-(3)【DDSの必要性】、【ターゲティング】、【その他のDDS】 C17-(1)【医薬品市場と開発すべき医薬品】、C17-(3)【遺伝子治療】		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	□主体性／Autonomy　□汎用的能力／Generic Competence　□倫理観／Ethics　■多様性の理解／Understanding Diversity　□協働性／Cooperativeness　□考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	□A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Ability of presentation (70%), Ability of discussion (30%)		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Pharmaceutial Informatics, Presentation Skill		
教科書・教材・参考書/Textbook,Teaching material,and Reference book			
受講要件（履修条件）/Prerequisites, etc.	None		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommdations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information (TEL) 095-819-2006　(FAX) 095-819-24948 (E-mail) support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	None		

授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
1st	Searching the scientific papers related to own research from Pubmed
2nd	Preparing a document for oral presentation
3rd	Oral presentation and discussion(1)
4th	Oral presentation and discussion(5)
5th	Oral presentation and discussion(6)
6th	Oral presentation and discussion(7)
7th	Oral presentation and discussion(8)
8th	Oral presentation and discussion(9)
9th	Oral presentation and discussion(10)
10th	Oral presentation and discussion(11)
11th	Oral presentation and discussion(12)
12th	Oral presentation and discussion(12)
13th	Oral presentation and discussion(11)
14th	Oral presentation and discussion(12)
15th	Oral presentation and discussion(13)

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010D4	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Pharmaceutical Informatics／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	川上　茂／Kawakami Shigeru, 萩森　政頼／Hagimori Masayori		
授業担当教員名（科目責任者）／Professor in charge of the subject	川上　茂／Kawakami Shigeru		
授業担当教員名（オムニバス科目等）／Professor(s)	川上　茂／Kawakami Shigeru, 萩森　政頼／Hagimori Masayori		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	1th, 2th		
担当教員Eメールアドレス/E-mail address	skawakam@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	Pharmaceutical Informatics		
担当教員TEL/Tel	095-819-8563		
担当教員オフィスアワー/Office hours	9:00-17:00		
授業の概要及び位置づけ/Course overview and relationship to other subjects	Learing experimental methods used for research of pharmaceutical informatics.【薬学教育モデル・コアカリキュラム一般目標】A 全学年を通して：ヒューマニズムについて学ぶ A(2)医療の担い手としてのこころ構え、C16 製剤化のサイエンス (3)DDS (Drug Delivery System: 薬物送達システム)、C17　医薬品の開発と生産(1)医薬品開発と生産の流れ、(3)バイオ医薬品とゲノム情報		
授業到達目標/Course goals	The goal of this class is i) laerning evaluation method using cultured cells and animals, ii) making a presentation document of own research, iii) preparing a scientic paper of own research　薬学教育モデル・コアカリキュラム到達目標を含む項目：A-(2)【研究活動に求められるこころ構え】、C16-(3)【DDSの必要性】、【ターゲティング】、【その他のDDS】 C17-(1)【医薬品市場と開発すべき医薬品】、C17-(3)【遺伝子治療】		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	□主体性／Autonomy　□汎用的能力／Generic Competence　□倫理観／Ethics　■多様性の理解／Understanding Diversity　□協働性／Cooperativeness　□考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	□A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills ■D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Obtained paper 70%, Experimental skill and behavior 30%		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Pharmceutical inforamtics, Targeting		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Scientific papers		
受講要件（履修条件）/Prerequisites, etc.	None		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommdations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information (TEL) 095-819-2006　(FAX) 095-819-24948 (E-mail) support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)			
学生へのメッセージ/Message for students	None		

授業計画詳細／Course Schedule	
回(日時)／Time(date and time)	授業内容／Contents
1st	Study about formulation.
2nd	Study about evaluation method of physicochemical properties of formaulation.
3rd	Study about evaluation method using cultured cells on cellular uptake (1).
4th	Study about evaluation method using cultured cells on cellular uptake (2).
5th	Study about evaluation method using cultured cells on pharamcological effect(1).
6th	Study about evaluation method using cultured cells on pharamcological effect(2).
7th	Study about evaluation method using rodents on pharmacokinetics (1).
8th	Study about evaluation method using rodents on pharmacokinetics (2).
9th	Study about evaluation method using rodents on pharamcological effect (1).
10th	Study about evaluation method using rodents on pharamcological effect (2).
11th	Discussion about obtained results.
12th	Preparation of presentation (1)
13th	Preparation of presentation (2)
14th	Preparation of scientific paper (1)
15th	Preparation of scientific paper (2)

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//4.0
時間割コード／Time schedule code	201855082000B5	科目番号／Subject code	55082000
科目ナンバリングコード／Numbering Code	BMMP 66812_796		
授業科目名／Subject	Exercise Biomedical Sciences：Pharmaceutics／Exercise Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	西田　孝洋／Nishida Koyo, 麓　伸太郎／Fumoto Shintaro, 宮元　敬天／Hirotaka Miyamoto		
授業担当教員名（科目責任者）／Professor in charge of the subject	西田　孝洋／Nishida Koyo		
授業担当教員名（オムニバス科目等）／Professor(s)	西田　孝洋／Nishida Koyo, 麓　伸太郎／Fumoto Shintaro, 宮元　敬天／Hirotaka Miyamoto		
科目分類／Class type	Exercise Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	演習／Seminar
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	特別コース		
担当教員Eメールアドレス/E-mail address	koyo-n@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	歯学部本館7階　薬剤学教授室		
担当教員TEL/Tel	095-819-8566		
担当教員オフィスアワー/Office hours	火・金曜日 16:00-18:00（LACSで予定を確認すること）、メールでも対応。		
授業の概要及び位置づけ/Course overview and relationship to other subjects	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).		
授業到達目標/Course goals	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 solution.		
知識・技能以外に、この授業を通して身につけて欲しい力（1つ以上3つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over □B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	Ability to understand scientific papers 50%　　Ability for questions and answers 50%		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	Searching scientific papers		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Scientific journals written in English		
受講要件（履修条件）/Prerequisites, etc.	none		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)	http://www.ph.nagasaki-u.ac.jp/		
学生へのメッセージ/Message for students	Preparation studies for reading scientific papers and replying to questions are required.		
授業計画詳細／Course Schedule			

回(日時)／Time(date and time)	授業内容／Contents
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)

学期／Semester	2018年度／Academic Year　後期／Second Semester	曜日・校時／Day・Period	他／Others 0
開講期間／Class period	2018/10/01～2020/09/30		
必修選択／Required/Elective class	必修／required	単位数(一般/編入/留学)／Credits (general/admission/overseas)	//16.0
時間割コード／Time schedule code	201855082010D5	科目番号／Subject code	55082010
科目ナンバリングコード／Numbering Code	BMMP 66912_796		
授業科目名／Subject	Experiment Biomedical Sciences：Pharmaceutics／Experiment Biomedical Sciences		
編集担当教員／Professor in charge of putting together the course syllabus	西田　孝洋／Nishida Koyo, 麓　伸太郎／Fumoto Shintaro		
授業担当教員名（科目責任者）／Professor in charge of the subject	西田　孝洋／Nishida Koyo		
授業担当教員名（オムニバス科目等）／Professor(s)	西田　孝洋／Nishida Koyo, 麓　伸太郎／Fumoto Shintaro		
科目分類／Class type	Experiment Biomedical Sciences		
対象年次／Year	1, 2	講義形態／Class Form	実験／Experiment
教室／Class room	〔薬学〕各担当教員研究室／Laboratory		
対象学生（クラス等）　/Target students	特別コース		
担当教員Eメールアドレス/E-mail address	koyo-n@nagasaki-u.ac.jp		
担当教員研究室/Instructor office	歯学部本館7階　薬剤学教授室		
担当教員TEL/Tel	095-819-8566		
担当教員オフィスアワー/Office hours	火・金曜日 16:00-18:00（LACSで予定を確認すること）、メールでも対応。		
授業の概要及び位置づけ/Course overview and relationship to other subjects	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.		
授業到達目標/Course goals	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.		
知識・技能以外に、この授業を通して身につけて欲しい力（１つ以上３つまで）/Ability other than knowledge and skills acquired mainly through lessons (1 to 3)	■主体性／Autonomy　■汎用的能力／Generic Competence　□倫理観／Ethics　□多様性の理解／Understanding Diversity　□協働性／Cooperativeness　■考えをやり取りする力／Ability to exchange ideas　□国際・地域社会への関心／Interest in international / local society		
学生の思考を活性化させるための授業手法/Lesson method to stimulate students' thinking	■A.授業内容の理解度を確認したり自分で考えさせたりする活動 / Activities to check the degree of comprehension of the contents to the lesson or to think over ■B.多角的に考えるために他者と関わる活動 / Activities involving others to think from various perspectives □C.技能修得のために実践する活動 / Activities to practice for acquiring skills □D.問題解決のために知識を総合的に活用する活動 / Activities that comprehensively utilize knowledge to solve problems □E.上記以外の学生の思考の活性化を促す授業手法 / Teaching methods to stimulate students' thinking other than the above □F.教員からの講義のみで構成される / It consists only of lectures from teachers		
成績評価の方法・基準等/Grading	50%writing paper, 50% experiment		
各回の授業内容・授業方法（学習指導方法）/Class content and format	See "Time(date and time)" for details.		
事前、事後学習の内容/Preparation & Review			
キーワード/Key word	DDS		
教科書・教材・参考書/Textbook,Teaching material,and Reference book	Scientific journals written in English		
受講要件（履修条件）/Prerequisites, etc.	Scientific English		
アクセシビリティ/Accessibility (for students with disabilities)	In order to ensure equal educational opportunities for all students, Nagasaki University strives to remove societal barriers that may interfere with academic activities, and to provide reasonable accommodations as necessary and appropriate. If you have any questions or concerns regarding reasonable accommodations or other support in this class, please feel free to talk to the instructor (contact information above), or contact the Student Accessibility Office. Student Accessibility Office contact information （TEL）095-819-2006　（FAX）095-819-2948 （E-MAIL）support@ml.nagasaki-u.ac.jp		
備考（URL）/Remarks(URL)	http://www.ph.nagasaki-u.ac.jp/		
学生へのメッセージ/Message for students	none		
授業計画詳細／Course Schedule			

回(日時)／Time(date and time)	授業内容／Contents
第1回	Study about recent researches in drug delivery system.
第2回	Scheduling experiments. Comprehending unknown points by understanding published information.
第3回	Deliberating administration methods for drug delivery system.
第4回	Deliberating administration preparations for drug delivery system.
第5回	Discussion of experimental plan on seminar of Department of Pharmaceutics.
第6回	Study about disposition of drugs after administration onto organ surface.
第7回	Study about experimental method utilizing glass-made cylindrical diffusion cell for investigation of absorption from organ surface.
第8回	Study about experimental condition (administration dose, volume) for organ surface application of drugs.
第9回	Study about formulations for administration of drugs onto organ surface.
第10回	Discussion of findings in midterm conference of Department of Pharmaceutics.
第11回	Study about formulations which are applicable for clinical use.
第12回	Study about species differences and animal scale-up.
第13回	Discussion of findings in final conference of Department of Pharmaceutics.
第14回	Writing draft in English.
第15回	Completing scientific paper and submitting it to a scientific journal.