Tokyo Medical and Dental University

Graduate School of Medical and Dental Sciences

Medical and Dental Science and Technology

Master's Program

2016-17　BULLETIN

CONTENTS

Human Resource Development Goals

This course is rooted in a systematic curriculum developed through the fusion of numerous fields, with the primary focus on medicine, dentistry, and life science and technology. The goals of the course are to inspire mutual cooperation in the various domains of life sciences and to cultivate capable educators, researchers, technicians, and other professionals in medicine, dentistry, and life science and technology who bring extensive knowledge and high ethical standards on regarding human health and welfare to their work.

The In detail, the Master’s of Medical Administration Management Policy Course strives to effectively address today’s social needs pertaining to medical services, based on studies a course of the syllabus structured to develop professionals who will excel in positions of leadership. Specifically, the course is designed to train individuals who will help establish social systems that supply increasingly efficient and superior patient-focused health care in through the fields of medical administration and policy.

Application for Degree
Conditions for Completion and Method for Taking Courses

1. Conditions for completion

A student must attend this Master's Program for at least two years, acquire at least 30 units, and pass the master's thesis exam (open to the public) and the final examination.

2. How to take courses

The method to obtain 30 units on this Master's Program is as follows:

1） A student must obtain 16 units in compulsory subjects ("Philosophy of Medicine and Dentistry"," Initial Research Training"," Special Lectures for Advanced Research on Life Science and Technology"," Research for Thesis"," Seminar of Science and Engineering"," Practice of Science and Engineering"), obtain at least 14 units in electives.

2）In selecting subjects, a student must carefully read the syllabus and complete the procedures to sign up for a course after consulting with your supervisor.

3）Guidance counselor

A student who plans to take a master degree of Science or Engineering must determine a responsible guidance counselor and an assistant research guidance counselor. (Assistant research guidance counselor is not necessary for the student who plans to take other master degree.)

Responsible guidance counselor: professor, associate professor or lecture in Graduate School of Medical and Dental Sciences.

Assistant research guidance counselor: professor, associate professor, lecture, or assistant professor in a different department from that of responsible guidance counselor.

* One of two guidance counselors for a student who plans to take a master degree of Science or Engineering must belong to Life Science and Technology Track.

List of the Courses

Core courses

Course Titles	Units	Page
3001: Philosophy of Medicine and Dentistry	2	
3102: Initial Research Training	1	
3003: Special Lectures for Advanced Research on Life Science and Technology	1	
3004: Research for Thesis	4	
3005: Seminar of Medical Science	4	
3006: Practice of Medical Science	4	
3007: Seminar of Dental Science	4	
3008: Practice of Dental Science	4	
3009: Seminar of Oral Health Science	4	
3010: Practice of Oral Health Science	4	
3011: Seminar of Science and Engineering	4	
3012: Practice of Science and Engineering	4	

Electives

Course Titles	Units	Page
3013 / 3014: Human Anatomy・Oral Anatomy, Histology and Embryology	1	
3015: Functional Organization of the Human Body	1	
3016: Pathology	1	
3017: Environmental/Social Health	1	
3043: Oral Health Engineering	2	
3018: Oral Health Care Clinical Training	2	
3019: Visit Experience and Practice at Hospital Departments	1	
3020: Molecular and Cellular Biology	2	
3021: Pharmacology	2	
3022: Immunology	2	
3023: Developmental and Regenerative Bioscience	2	
3024: Molecular Cell Biology	1	
3025: Introduction to Medical Neurosciences	2	
3026: Introduction to Human Molecular Genetics	2	
3027: Oral Health Generic Care Sciences	2	
3028: Bioinformatics	2	
3029: Disease OMICS Informatics	2	
3030: Introduction to Chemistry and Biology of Biofunctional Molecules	2	
3031: Chemical Biology	2	
3032: Practical Chemical Biology	2	

3033: Special Lectures on Molecular Structures	2	
3034: Advanced Biomaterials Science	2	
3036: Applied Biomaterials	2	
3035: Biomedical Device Science and Engineering	2	
3044: Biomedical System Science and Engineering	2	
3037: Medical, Dental and Pharmaceutical Industrial Engineering	1	
3038: Negotiation and Debate in English	2	
3039: Medical and Research Ethics	1	
3040: Translational Research	2	
3042: Practice in Global Linkage between University and Industry	2	

Time Table

月日	曜日	1　8:50～10:20	2　10:30～12:00	3　13:00～14:30	4　14:40～16:10	5　16:20～17:50	6　18:00～19:30	7　19:40～21:10	
4月4日	月								↑履修登録受付期間
4月5日	火	14：00-15:00　ガイダンス							
4月6日	水	13：00　入学式							
4月7日	木								
4月8日	金	3039:研究倫理・医療倫理学1□	3013/14:人体/口腔形態学1◇	3013/14:人体/口腔形態学2◇					
4月9日	土								
4月10日	日								
4月11日	月	（ＲＩ取扱者に対する安全取り扱い講習会）							
4月12日	火	3002:初期研究研修△(9:50～17:00)							
4月13日	水								
4月14日	木						3038:英語交渉・ディベート特論1/2◇		
4月15日	金								
4月16日	土								
4月17日	日								
4月18日	月	3039:研究倫理・医療倫理学2□	3013/14:人体/口腔形態学3◇	3013/14:人体/口腔形態学4◇	3001:医歯学総合概論１☆	3102:Initial Research Training (for international students) 4/18(Mon)～4/22(Fri) ★14：40～18：00			↑履修登録修正
4月19日	火	3039:研究倫理・医療倫理学3□	3013/14:人体/口腔形態学5◇ 3031:ケミカルバイオロジー特論1□	3001:医歯学総合概論２☆	3001:医歯学総合概論３☆				
4月20日	水	3039:研究倫理・医療倫理学4□	3013/14:人体/口腔形態学6◇	3001:医歯学総合概論４☆	3001:医歯学総合概論５☆				
4月21日	木	3039:研究倫理・医療倫理学5□	3013/14:人体/口腔形態学7◇	3001:医歯学総合概論６☆	3001:医歯学総合概論７☆		3038:英語交渉・ディベート特論3/4◇		
4月22日	金	3039:研究倫理・医療倫理学6□	3013/14:人体/口腔形態学8◇	3001:医歯学総合概論８☆	3001:医歯学総合概論９☆				
4月23日	土								
4月24日	日								
4月25日	月								
4月26日	火								
4月27日	水								
4月28日	木								
4月29日	金								
4月30日	土								
5月1日	日								
5月2日	月								
5月3日	火								
5月4日	水								
5月5日	木								
5月6日	金	3039:研究倫理・医療倫理学7□	3039:研究倫理・医療倫理学8□	3028：バイオインフォマティクス1□	3001:医歯学総合概論１０☆				
5月7日	土								
5月8日	日								
5月9日	月	3020：生化学1◇	3016：病理病態学1◇ 3034：生体材料学１□	3001:医歯学総合概論１１☆	3001:医歯学総合概論１２☆	3034：生体材料学２◆			
5月10日	火	3020：生化学2◇	3016：病理病態学2◇ 3031:ケミカルバイオロジー特論2□	3016：病理病態学3◇ 3031:ケミカルバイオロジー特論3□	3040：トランスレーショナルリサーチ特論1/2◇				
5月11日	水	3020：生化学3◇	3016：病理病態学4◇ 3034：生体材料学３◆	3001:医歯学総合概論１３☆	3040：トランスレーショナルリサーチ特論3/4◇				
5月12日	木	3020：生化学4◇	3016：病理病態学5◇ 3034：生体材料学４◆	3001:医歯学総合概論１４☆	3038:英語交渉・ディベート特論5/6◇				
5月13日	金	3028：バイオインフォマティクス2□	3028：バイオインフォマティクス3□	3020：生化学5◇	3001:医歯学総合概論１５☆	3029：疾患オミックス情報学特論1□			
5月14日	土								
5月15日	日								
5月16日	月	3015：人体機能学1◇	3016：病理病態学6◇ 3034：生体材料学５◆	3020：生化学6◇	3016：病理病態学7◇	3029：疾患オミックス情報学特論2●			
5月17日	火	3015：人体機能学2◇	3016：病理病態学8◇	3020：生化学7◇	3015：人体機能学3◇	3029：疾患オミックス情報学特論3●			
5月18日	水	3015：人体機能学4◇ 3031:ケミカルバイオロジー特論4◆	3017：環境社会医歯学1◇ 3031:ケミカルバイオロジー特論5◆	3020：生化学8◇	3040：トランスレーショナルリサーチ特論5/6◇				
5月19日	木	3015：人体機能学5◇	3017：環境社会医歯学2◇	3020：生化学9◇	3038:英語交渉・ディベート特論7/8◇				
5月20日	金	3028：バイオインフォマティクス4□	3028：バイオインフォマティクス5□	3020：生化学10◇	3020：生化学11◇	3029：疾患オミックス情報学特論4♣			
5月21日	土								
5月22日	日								
5月23日	月	3015：人体機能学6◇	3017：環境社会医歯学3♣	3020：生化学12◇	3034：生体材料学6◆	3029：疾患オミックス情報学特論5♣			
5月24日	火	3015：人体機能学7◇	3017：環境社会医歯学4◇	3020：生化学13◇	3029：疾患オミックス情報学特論6□				
5月25日	水	3015：人体機能学8◇ 3031:ケミカルバイオロジー特論6◆	3017：環境社会医歯学5◇ 3031:ケミカルバイオロジー特論7◆	3020：生化学14◇	3040：トランスレーショナルリサーチ特論7/8◇				
5月26日	木	3015：人体機能学9◇	3017：環境社会医歯学6◇	3020：生化学15◇	3038:英語交渉・ディベート特論9/10◇				
5月27日	金	3028：バイオインフォマティクス6♣	3028：バイオインフォマティクス7□	3021：薬理学1◇	3029：疾患オミックス情報学特論7♣	3029：疾患オミックス情報学特論8♣			
5月28日	土								
5月29日	日								
5月30日	月	3026：遺伝医学特論1◇	3017：環境社会医歯学7◇	3021：薬理学2◇	3029：疾患オミックス情報学特論9□	3034：生体材料学7◆			
5月31日	火	3026：遺伝医学特論2◇	3017：環境社会医歯学8◇ 3034：生体材料学８◆	3021：薬理学3◇	3034：生体材料学9◆				
6月1日	水	3026：遺伝医学特論3◇ 3031:ケミカルバイオロジー特論8◆	3026：遺伝医学特論4◇ 3031:ケミカルバイオロジー特論9◆	3021：薬理学4◇	3040：トランスレーショナルリサーチ特論9/10◇				
6月2日	木	3026：遺伝医学特論5◇ 3034：生体材料学10◆	3026：遺伝医学特論6◇ 3034：生体材料学11◆	3021：薬理学5◇	3038:英語交渉・ディベート特論11/12◇				
6月3日	金	3028：バイオインフォマティクス8♣	3028：バイオインフォマティクス9□	3021：薬理学6◇	3044：バイオメディカルシステム理工学１◆				
6月4日	土								
6月5日	日								
6月6日	月	3026：遺伝医学特論7◇ 3034：生体材料学12◆	3026：遺伝医学特論8◇ 3034：生体材料学13◆	3021：薬理学7◇	3029：疾患オミックス情報学特論10□				
6月7日	火	3026：遺伝医学特論9◇ 3031:ケミカルバイオロジー特論10◆	3026：遺伝医学特論10◇ 3031:ケミカルバイオロジー特論11◆	3021：薬理学8◇	3044：バイオメディカルシステム理工学２◆	3044：バイオメディカルシステム理工学３◆			

講義場所　△:MDタワー2階鈴木章夫記念講堂　☆:歯科棟南4階　◇:3号館6階　♣:MDタワー4階　●:MDタワー9階　□:MDタワー21階
▼:MDタワー23階 ■:1号館7階　◆:22号館　◎:21号館　★:2号館3階

Time Table

月日	曜日	1　8:50～10:20	2　10:30～12:00	3　13:00～14:30	4　14:40～16:10	5　16:20～17:50	6　18:00～19:30	7　19:40～21:10
6月8日	水	3026：遺伝医学特論11◇	3026：遺伝医学特論12◇	3021：薬理学9◇	3040：トランスレーショナルリサーチ特論11/12◇			
6月9日	木	3026：遺伝医学特論13◇ 3034：生体材料学14◆	3026：遺伝医学特論14◇ 3034：生体材料学15◆	3021：薬理学10◇	3044：バイオメディカルシステム理工学4◆	3038:英語交渉・ディベート特論13/14/15◇		
6月10日	金	3028：バイオインフォマティクス10□	3028：バイオインフォマティクス11□	3021：薬理学11◇	3044：バイオメディカルシステム理工学5◆	3029：疾患オミックス情報学特論11□		
6月11日	土							
6月12日	日							
6月13日	月	3026：遺伝医学特論15◇ 3036：応用生体材料学1◆	3025：神経疾患特論1◇ 3036：応用生体材料学2◆	3021：薬理学12◇	3029：疾患オミックス情報学特論12□	3029：疾患オミックス情報学特論13□		
6月14日	火	3025：神経疾患特論2◇ 3031:ケミカルバイオロジー特論12◆	3025：神経疾患特論3◇ 3031:ケミカルバイオロジー特論13◆	3021：薬理学13◇	3044：バイオメディカルシステム理工学6◆	3044：バイオメディカルシステム理工学7◆		
6月15日	水	3025：神経疾患特論4◇ 3036：応用生体材料学3◆	3025：神経疾患特論5◇ 3036：応用生体材料学4◆	3021：薬理学14◇	3040：トランスレーショナルリサーチ特論13/14/15◇			
6月16日	木	3025：神経疾患特論6◇ 3036：応用生体材料学5◆	3025：神経疾患特論7◇ 3036：応用生体材料学6◆	3021：薬理学15◇	3044：バイオメディカルシステム理工学8◆			
6月17日	金	3028：バイオインフォマティクス12□	3028：バイオインフォマティクス13□	3024：細胞生物学特論1□ 3035：バイオメディカルデバイス理工学1◆	3036：応用生体材料学7◆	3036：応用生体材料学8◆		
6月18日	土							
6月19日	日							
6月20日	月	3025：神経疾患特論8◇ 3036：応用生体材料学9◆	3025：神経疾患特論9◇ 3036：応用生体材料学10◆	3024：細胞生物学特論2□ 3035：バイオメディカルデバイス理工学3◆	3029：疾患オミックス情報学特論14□	3029：疾患オミックス情報学特論15●		
6月21日	火	3025：神経疾患特論10◇	3025：神経疾患特論11◇	3024：細胞生物学特論3□ 3035：バイオメディカルデバイス理工学2◆	3036：応用生体材料学11◆	3036：応用生体材料学12◆		
6月22日	水	3025：神経疾患特論12◇ 3031:ケミカルバイオロジー特論14◆	3025：神経疾患特論13◇ 3031:ケミカルバイオロジー特論15◆	3024：細胞生物学特論4□ 3035：バイオメディカルデバイス理工学4◆	3036：応用生体材料学13◆			
6月23日	木	3025：神経疾患特論14◇ 3036：応用生体材料学14◆	3025：神経疾患特論15◇ 3036：応用生体材料学15◆	3024：細胞生物学特論5□ 3035：バイオメディカルデバイス理工学5/6◆	3024：細胞生物学特論6□			
6月24日	金	3028：バイオインフォマティクス14□	3028：バイオインフォマティクス15□	3024：細胞生物学特論7□ 3035：バイオメディカルデバイス理工学7/8◆	3024：細胞生物学特論8□			
6月25日	土							
6月26日	日							
6月27日	月	3019：病院実習(8:50～17:50)			予備日：ケミカルバイオロジー技術特論（14:40～19:30） 【Occasional Date】3032：Practical Chemical Biology（14:40～19:30）			
6月28日	火							
6月29日	水							
6月30日	木							
7月1日	金							
7月2日	土							
7月3日	日							
7月4日	月	予備日：病院実習(8:50～17:50)			3032：ケミカルバイオロジー技術特論（14:40～19:30） 3032：Practical Chemical Biology（14:40～19:30）			
7月5日	火							
7月6日	水							
7月7日	木							
7月8日	金							
7月9日	土							
7月10日	日							
7月11日	月							
7月12日	火	試験・補講期間						
7月13日	水							
7月14日	木							
7月15日	金							
7月16日	土							
7月17日	日							
7月18日	月							
7月19日	火							
8-9月		3018：口腔保健臨地実習（8:50～17:50）						
10月1日	土							
10月2日	日							
10月3日	月	3030：機能分子化学1◆	3030：機能分子化学2◆	3033：分子構造学特論1/2□				
10月4日	火	3023：発生・再生科学1□	3023：発生・再生科学2□	3033：分子構造学特論3/4□				
10月5日	水	3027：口腔保健福祉学1■ 3043：口腔保健工学特論1★	3027：口腔保健福祉学2■ 3043：口腔保健工学特論2★					
10月6日	木		3043：口腔保健工学特論3★	3043：口腔保健工学特論4★				
10月7日	金	3022：免疫学1◇	3022：免疫学2◇					
10月8日	土							
10月9日	日							
10月10日	月							
10月11日	火	3023：発生・再生科学3□	3023：発生・再生科学4□	3033：分子構造学特論5/6□			3037：医歯薬産業技術特論1◎	
10月12日	水	3027：口腔保健福祉学3■ 3043：口腔保健工学特論5★	3027：口腔保健福祉学4■ 3043：口腔保健工学特論6★		3001：Philosophy of Medicine and Dentistry 1□	3001：Philosophy of Medicine and Dentistry 2□		
10月13日	木	3022：Immunology1/2▼		3001：Philosophy of Medicine and Dentistry 3□	3028：Bioinformatics 1/2□			
10月14日	金	3022：免疫学3◇ 3022：Immunology3/4▼	3022：免疫学4◇		3001：Philosophy of Medicine and Dentistry 4□			
10月15日	土							
10月16日	日							
10月17日	月							
10月18日	火	3023：発生・再生科学5□	3023：発生・再生科学6□	3023：発生・再生科学7□	3001：Philosophy of Medicine and Dentistry 5/6●		3037：医歯薬産業技術特論2◎	
10月19日	水	3027：口腔保健福祉学5■ 3043：口腔保健工学特論7★	3027：口腔保健福祉学6■ 3043：口腔保健工学特論8★	3001：Philosophy of Medicine and Dentistry 7/8◆				
10月20日	木	3022：Immunology 5/6▼		3001：Philosophy of Medicine and Dentistry 9/10◆	3043：口腔保健工学特論9★	3043：口腔保健工学特論10★		
10月21日	金	3022：免疫学5◇	3022：免疫学6◇	3022：免疫学7◇	3022：Immunology7▼			
10月22日	土							
10月23日	日							
10月24日	月	3030：機能分子化学3◆	3030：機能分子化学4◆	3033：分子構造学特論7/8□		3001：Philosophy of Medicine and Dentistry 11◆		

履修登録受付期間

講義場所　△:MDタワー2階鈴木章夫記念講堂　☆:歯科棟南4階　◇:3号館6階　♣:MDタワー4階　●:MDタワー9階　□:MDタワー21階
▼:MDタワー23階 ■:1号館7階　◆:22号館　◎:21号館　★:2号館3階

Time table

月日	曜日	1　8:50～10:20	2　10:30～12:00	3　13:00～14:30	4　14:40～16:10	5　16:20～17:50	6　18:00～19:30	7　19:40～21:10
10月25日	火	3023：発生・再生科学8□	3023：発生・再生科学9□	3023：発生・再生科学10□	3028：Bioinformatics 3□	3001：Philosophy of Medicine and Dentistry 12◆	3037：医歯薬産業技術特論3◎	
10月26日	水	3027：□腔保健福祉学7■	3027：□腔保健福祉学8■		3043：□腔保健工学特論11★			
		3028：Bioinformatics 4/5□		3001：Philosophy of Medicine and Dentistry13/14◆				
10月27日	木		3001：Philosophy of Medicine and Dentistry 15◆				3028：Bioinformatics 6●	
10月28日	金	3022：免疫学8◇	3022：免疫学9◇	3022：免疫学10◇	3022：Immunology 8/9▼			
10月29日	土							
10月30日	日							
10月31日	月	3030：機能分子化学5◆	3030：機能分子化学6◆	3033：分子構造学特論9/10□		3040：Translational Research 1/2◆		
		3022：Immunology 10/11▼						
11月1日	火	3023：発生・再生科学11□	3023：発生・再生科学12□	3023：発生・再生科学13□	3034：Advanced Biomaterials Science 1◆	3036：Applied Biomaterials 1◆	3037：医歯薬産業技術特論4◎	
11月2日	水	3027：□腔保健福祉学9■	3027：□腔保健福祉学10■	3036：Applied Biomaterials 2◆	3034：Advanced Biomaterials Science 2/3◆			
		3043：□腔保健工学特論12★	3043：□腔保健工学特論13★					
11月3日	木							
11月4日	金	3022：免疫学11◇	3022：免疫学12◇			3036：Applied Biomaterials 3◆		
		3022：Immunology 12/13▼						
11月5日	土							
11月6日	日							
11月7日	月	3030：機能分子化学7◆	3030：機能分子化学8◆	3033：分子構造学特論11/12□		3040：Translational Research 3/4◆		
11月8日	火	3023：発生・再生科学14□	3023：発生・再生科学15□	3034：Advanced Biomaterials Science 4/5◆		3036：Applied Biomaterials 4◆	3037：医歯薬産業技術特論5◎	
11月9日	水	3027：□腔保健福祉学11■	3027：□腔保健福祉学12■	3034：Advanced Biomaterials Science 6/7◆		3036：Applied Biomaterials 5◆		
		3043：□腔保健工学特論14★	3043：□腔保健工学特論15★					
11月10日	木	3034：Advanced Biomaterials Science 8/9◆		3036：Applied Biomaterials 6/7◆		3028：Bioinformatics 7/8□		
11月11日	金	3022：免疫学13◇	3022：免疫学14◇	3022：Immunology14/15▼				
11月12日	土							
11月13日	日							
11月14日	月	3030：機能分子化学9◆	3030：機能分子化学10◆	3033：分子構造学特論13/14□		3040：Translational Research 5/6◆		
11月15日	火	3030：機能分子化学11◆	3030：機能分子化学12◆	3030：機能分子化学13◆	3034：Advanced Biomaterials Science 10/11◆		3037：医歯薬産業技術特論6◎	
11月16日	水	3027：□腔保健福祉学13■	3027：□腔保健福祉学14■	3027：□腔保健福祉学15■	3034：Advanced Biomaterials Science 12/13◆			
11月17日	木	3036：Applied Biomaterials 8/9◆		3034：Advanced Biomaterials Science 14/15◆		3028：Bioinformatics 9/10●		
11月18日	金	3022：免疫学15◇	3036：Applied Biomaterials 10/11/12◆			3025：Introduction to Medical Neurosciences 1□		
11月19日	土							
11月20日	日							
11月21日	月	3030：機能分子化学14◆	3030：機能分子化学15◆	3033：分子構造学特論15□	3025：Introduction to Medical Neurosciences 2/3□		3037：医歯薬産業技術特論7◎	
11月22日	火	試験・補講期間						
11月23日	水							
11月24日	木	試験・補講期間						
11月25日	金							
11月26日	土							
11月27日	日							
11月28日	月			3028：Bioinformatics 11/12□		3034：Advanced Biomaterials Science (Exam)◆ ※17：00～18：30		
11月29日	火	3030：Introduction to Chemistry and Biology of Biofunctional Molecules 1/2◆		3025：Introduction to Medical Neurosciences 4/5□		3036：Applied Biomaterials 13◆	3037：医歯薬産業技術特論8◎	
11月30日	水	3030：Introduction to Chemistry and Biology of Biofunctional Molecules 3/4◆		3025：Introduction to Medical Neurosciences 6/7□				
12月1日	木	3028：Bioinformatics 13/14□		3025：Introduction to Medical Neurosciences 8/9□				
12月2日	金	3030：Introduction to Chemistry and Biology of Biofunctional Molecules 5/6◆		3025：Introduction to Medical Neurosciences 10/11□		3036：Applied Biomaterials 14◆		
12月3日	土							
12月4日	日							
12月5日	月	3030：Introduction to Chemistry and Biology of Biofunctional Molecules 7/8◆		3025：Introduction to Medical Neurosciences 12/13□		3035：Biomedical Device Science and Engineering 1◆		
12月6日	火	3028：Bioinformatics 15□	3030：Introduction to Chemistry and Biology of Biofunctional Molecules 9◆	3025：Introduction to Medical Neurosciences 14/15□		3035：Biomedical Device Science and Engineering 2◆		
12月7日	水	3030：Introduction to Chemistry and Biology of Biofunctional Molecules 10/11◆		3035：Biomedical Device Science and Engineering 3/4◆		3036：Applied Biomaterials 15◆		
12月8日	木	3030：Introduction to Chemistry and Biology of Biofunctional Molecules 12/13◆		3035：Biomedical Device Science and Engineering 5/6◆		3044：Biomedical System Science and Engineering 1◆		
12月9日	金	3044：Biomedical System Science and Engineering2◆	3035：Biomedical Device Science and Engineering 7/8◆			3022：Immunology (Exam)▼ ※17：00～18：30		
12月10日	土							
12月11日	日							
12月12日	月	3030：Introduction to Chemistry and Biology of Biofunctional Molecules 14/15◆		3044：Biomedical System Science and Engineering 3/4◆				
12月13日	火	3044：Biomedical System Science and Engineering 5/6◆		3036：Applied Biomaterials (Exam)◆ ※13：30～15：00		3025：Introduction to Medical Neurosciences (Exam)●※17：00～18：30		
12月14日	水	3044：Biomedical System Science and Engineering 7/8◆						
12月15日	木			3035：Biomedical Device Science and Engineering (Exam)◆※13：30～15：00				
12月16日	金	3030：Introduction to Chemistry and Biology of Biofunctional Molecule (Exam)◆※10：00～11：30		3044：Biomedical System Science and Engineering (Exam)◆※13：30～15：00				

※1　産学リンケージ特論(3042)は時間割から除く。　※2　英語表記科目：10月入学者対象講義

講義場所　△:MDタワー2階鈴木章夫記念講堂　☆:歯科棟南4階　◇:3号館6階　♣:MDタワー4階　●:MDタワー9階　□:MDタワー21階
▼:MDタワー23階　■:1号館7階　◆:22号館　◎:21号館　★:2号館3階

Philosophy of Medicine and Dentistry

(Code: 3001 1st year 2 units)

1. Instructor(s)

Dr. Izumi Sugihara
Building 3, 14F, Ext. 5152,
E-mail: isugihara.phy1@tmd.ac.jp

2. Classroom/Lab

Next Page

3. Course Purpose and Outline

Course Purpose

This course teaches the whole image of modern medical and dental sciences and clinical activities including desease prevention for students who may have various academic backgrounds.

Outline

Knowledge of a wide range of bio-related science is needed to fully understand and utilize results of latest biosciences. This series of lectures covers basic ideas of molecular biology, protein chemistry, organic chemistry and bioengineering, and is expected to widen intellectual horizons of students and improve their understanding of the complex nature of current biosciences.

4. Course Objective(s)

students who may have various academic backgrounds to acquire a certain level of understanding of the whole image of medical and dental sciences, and strategies and logics of clinical activities, which will be helpful in research for thesis and in research, and social activities after graduation.

5. Format

Lecture

6. Course Description and Timetable

Next Page

7. Grading System

Attendance (75 %) and report (25 %)

8. Prerequisite Reading

It is recommended that one refers to the textbook (below) before the lecture.

9. Reference Materials

中村實監修 新編臨床医学概論 医学書院 平成16年 ISBN4-86003-326-4
English textbook to be announced

10. Important Course Requirements

None

11. Office hours

Ask Educational Planning Section.

12. Note(s) to students

None.

Schedule

No	Day Time	Topics Venue	Instructor
1	April 18, 2016 14:40～16:10	Gynecology and Obstetrics Floor 4, Building 7	Kinya Ishikawa
2	April 19, 2016 13:00～14:30	Endodontic Treatment on the Basis of Pulp Biology Floor 4, Building 7	Hideharu Ikeda
3	April 19, 2016 14:40～16:10	This lecture outlined diagnosis and treatment strategies for congenital and acquired disease in the oral and maxillofacial region such as Cleft Lip and palate, Facial Deformity and Oral and axillofacial tumor, and so on. Floor 4, Building 7	Narikazu Uzawa
4	April 20, 2016 13:00～14:30	Pediatrics and Developmental Biology Floor 4, Building 7	Hirokazu Kanegane
5	April 20, 2016 14:40～16:10	To understand neurosurgical evaluation of neck and back pain due to nerve compression with or without fracture, we give a lecture on the anatomy of spine and nervous system, and the treatment of spinal disorders. Floor 4, Building 7	Mitsuhiro Enomoto
6	April 21, 2016 13:00～14:30	Hematology Floor 4, Building 7	Ayako Arai
7	April 21, 2016 14:40～16:10	The purpose of a dermatology lecture is understanding not only a structure, function, imuunological roles, biological roles of the skin but also pathophysiological mechanism of skin diseases. Floor 4, Building 7	Hiroo Yokozeki
8	April 22, 2016 13:00～14:30	Students are expected to understand a variety of respiratory diseases in terms of scientific aspect and make an appropriate plan to examine unsolved research questions. Floor 4, Building 7	Naohiko Inase
9	April 22, 2016 14:40～16:10	Occlusal function and prosthetic appliance Floor 4, Building 7	Daizo Okada
10	May 6, 2016 14:40～16:10	Laboratory medicine is a field to develop analytical methods of pathophysiology of various diseases. Floor 4, Building 7	Mai Ito
11	May 9, 2016 13:00～14:30	Psychiatry and Behavioral Sciences Floor 4, Building 7	Tooru Nishikawa
12	May 9, 2016 14:40～16:10	Cardiovascular Medicine Floor 4, Building 7	Mitsuaki Isobe
13	May 11, 2016 13:00～14:30	Principles and update of medical practice in endocrinology and metabolism Floor 4, Building 7	Koshi Hashimoto
14	May 12, 2016 13:00～14:30	Surgical Oncology Floor 4, Building 7	Hiroyuki Uetake
15	May 13, 2016 14:40～16:10	Section of introductory collagen disease M&D Tower 2F, Lecture room 2	Hideyuki Iwai

Initial Research Training
(for international students)

（Code : ３１０２　1st year　1 unit）

[Course Description]

Research work should be done in accordance with various rules and regulations including those related to ethics, and those related to handling of toxic substances, radioactive materials and animals. This series of lectures introduce rules and regulations that the students should follow during research work. Also, the students learn how to use libraries and data bases, and how to avoid scientific misconducts.

[Grading]

Attendance

[Course Schedule]

See the next page; Table

[Notes]

When you register for “Initial Research Training”, you must choose code No.3102.

If you are the Japanese or the international students who are fluent speakers of Japanese, you should be advised to take part in “Initial Research Training for Japanese” (Code: 3002).

[Inquiring]

Educational Planning Section

TEL 5803-4679, 4676

Initial Research Training FY2016
Graduate School of Medical and Dental Sciences

Date : Mon. 18th April to Fri. 22th April 2016

Venue: Lecture Room 3, 11th floor, M&D Tower (Excluding lectures with *1)

Timetable :

date	First (14:40～15:40)	Second (15:50～16:50)	Third (17:00～18:00)
18-Apr Mon.	Ethics of Researcher Sachiko ISEKI Molecular Craniofacial Embryology Professor	Thesis Writing and Presenting Research Cannell David Richard International Exchange Center Associate Professor	Methods for studying the development Hiroshi NISHINA Developmental and Regenerative Biology Professor
19-Apr Tue.	Environment and safety in research Takao HANAWA Metallic Biomaterials Professor	To conduct a safe and fair research *2 Hirobumi TERAOKA Office for Research Safety and Management Professor emeritus	How to make scientific researches reliable and successful Tetsuya TAGA Stem Cell Regulation Professor
20-Apr Wed.	Flow cytometry and related devices for life science Toshiaki OHTEKI Biodefense Research Professor	Use and Handling of Radioisotopes and Radiations Masayuki HARA General Isotope Research Division Associate Professor	Study of Functional gene and genome Toshihiro TANAKA Human Gene Sciences Research Division Professor
21-Apr Thu.	The Design of Animal Experiments Hitomi SUZUKI Experimental Animal Model for Human Disease Assistant Professor	Immunology in Medical Research Mari KANNAGI Immunotherapeutics Professor	Biosafety and basic microbiological technique*2 Shoji YAMAOKA Molecular Virology Professor
22-Apr Fri.	Bioethics Masayuki YOSHIDA Life Science and Bioethics Research Center Professor	Collaborative Institutional Training Initiative JAPAN program Masayuki YOSHIDA Life Science and Bioethics Research Center Professor	Literature search・Utilization of library *1 Atsuhiro KINOSHITA Institute for Library and Media Information Technology Professor

*1: Venue: 4th floor, M&D Tower

*2: Video Screening

Special Lectures for Advanced Research on Life Science and Technology

(Code: 3003 1st year 1 units)

1. Instructor(s)

Dr. Izumi Sugihara (Chairman of the Master Course Education Committee)
Contact: Educational Planning Section,
TEL:03-5803-4534、Email: grad02@ml.tmd.ac.jp

2. Classroom/Lab

Next page (Mainly at lecture rooms in TMDU. Announced beforehand.)

3. Course Purpose and Outline

Course Purpose

This course requires students to attend lectures and seminars in which top scientists inside and outside TMDU talk, learn leading advances in research fields, and join in academic discussion.

Outline

Students register and attend the research seminars (listed below)
held at our university and presented by invited speakers. These seminars should provide students with exposure to forefront research covering a wide range of topic areas from experts in their discipline.

4. Course Objective(s)

Students have to attend eight or more resistered lectures and seminars. Learn advances in research fields, which will be helpful in research for thesis and research, and social activities after graduation.

5. Format

Attending lectures and seminars that are anounced in advance.

6. Course Description and Timetable

Lectures and seminars that are registered for this course includes:
Graduate School Special Lectures:
Graduate School Seminars:
Medical Research Institute Seminars:
Medical Dental Engineering Institute Seminars:

Each lecture and seminar is anounced in the poster and the TMDU home page on the following URL.

Other seminars can be registered in this course if the supervisor apply for it.

1) Graduate School Special Lecture, 2) Graduate School Seminar
※「がんプロ」「ボーダレス」seminars are NOT countable.
【URL】http://www.tmd.ac.jp/faculties/graduate_school/seminar/index.html
3) Medical Research Institute (MRI) Seminar
【URL】http://www.tmd.ac.jp/mri/events/index.html
4) Institute of Biomaterials and Bioengineering (IBB) Seminar
【URL】http://www.tmd.ac.jp/i-mde/www/event/index.html

７. Grading System

Students who attend eight or more lectures and seminars are evaluated. The number of seminars and lectures (exceeding eight) that a student attends (20 %), and student's discussion during the seminar (if he/she says something in the seminar) (20 %) are considered.

８. Prerequisite Reading

Refer to the announcement of each lecture and seminar.

９. Reference Materials

Refer to the announcement of each lecture and seminar.

１０. Important Course Requirements

Attend all lectures in the first one year. It is preferable to attend lectures and seminars in a wide range of research fields. Get a signature of the host of the lecture or seminar in the attendance record form each time a student attends it. If you speak something during the seminar, write down your remarks in the "comment" area of the attendance record form and get a signature of the host of the lecture. Submit the attendance record form by the end of March of the first one year to the education office.

１１. Office hours

Refer to the announcement of each lecture and seminar.

１２. Note(s) to students

(none)

Research for Thesis

(Code: 3004 1st-2nd year 4 units)

1. Instructor(s)

The supervisor (and the vice supervisor)

2. Classroom/Lab

To be specified by the supervisor(s)

3. Course Purpose and Outline

Course Purpose

Students are supposed to learn what research is in the medical, dental, bioscientfic or engineering fields and to acquire basic ability to perform research.

Outline

Research subject is determined in the field of medical, dental, bioscience and bioengineering through discussion with the supervisors. Students actively participate in their research projects to acquire techniques and the ability/skill for assessing the research subject by themselves.

4. Course Objective(s)

To create a research project, form a research plan, perform research, revise the research plan, summarize the research product, and finalize the thesis.

5. Format

To be specified by the supervisor(s)

6. Course Description and Timetable

To be specified by the supervisor(s)

7. Grading System

Comprehensive grading based on the thesis paper and other achievements

8. Prerequisite Reading

To be specified by the supervisor(s)

9. Reference Materials

To be specified by the supervisor(s)

10. Important Course Requirements

To be specified by the supervisor(s)

11. Office hours

To be specified by the supervisor(s)

12. Note(s) to students

This course is required for all students. Please read the article “Application for degree” in this guide book for further information on the policies and regulations of the Graduate School.

Seminar of Medical Science

(Code: 3005 1st year 4 units)

1. Instructor(s)

The supervisor (and the vice supervisor)

2. Classroom/Lab

To be specified by the supervisor(s)

3. Course Purpose and Outline

Course Purpose

The course teaches presentation skill, communication skill, information-gathering skill, literature-searching skill, and logical thinking skill, which are necessary in master course research in in medicine, by attedning small-group seminars run by the supervisor(s).

Outline

Students attend laboratory seminars and meetings under the guidance of supervisors to acquire the basick research ability in medicine.

4. Course Objective(s)

A student is supposed to acquire presentation skill, communication skill, information-gathering skill, literature-searching skill, and logical thinking skill, which are necessary in master course research in in medicine.

5. Format

Practical training in laboratory seminars and meatings under the guidance of supervisors or other staff in the department in man-to-man or a small-group environment.

6. Course Description and Timetable

To be specified by the supervisor(s)

7. Grading System

To be specified by the supervisor(s)

8. Prerequisite Reading

To be specified by the supervisor(s)

9. Reference Materials

To be specified by the supervisor(s)

10. Important Course Requirements

To be specified by the supervisor(s)

11. Office hours

To be specified by the supervisor(s)

12. Note(s) to students

(None)

Practice of Medical Science

(Code: 3006 1st year 4 units)

1. Instructor(s)

The supervisor (and the vice supervisor)

2. Classroom/Lab

To be specified by the supervisor(s)

3. Course Purpose and Outline

Course Purpose

The course teaches practical research methods, techniques, equipment-handling, data analysis and problem-solving, which are necessary in master course research in medical science.

Outline

Students learn techniques in bioscience and bioengineering under the guidance of supervisors in man-to-man or a small-group environment.

4. Course Objective(s)

A student is supposed to acquire practical research methods, techniques, equipment-handling, data analysis and problem-solving, which are necessary in master course research in medical science.

5. Format

Practical research training in laboratories under the guidance of supervisors or other staff in the department in man-to-man or a small-group environment.

6. Course Description and Timetable

To be specified by the supervisor(s)

7. Grading System

To be specified by the supervisor(s)

8. Prerequisite Reading

To be specified by the supervisor(s)

9. Reference Materials

To be specified by the supervisor(s)

10. Important Course Requirements

To be specified by the supervisor(s)

11. Office hours

To be specified by the supervisor(s)

12. Note(s) to students

(None)

Seminar of Dental Science

(Code: 3007 1st year 4 units)

1. Instructor(s)

The supervisor (and the vice supervisor)

2. Classroom/Lab

To be specified by the supervisor(s)

3. Course Purpose and Outline

Course Purpose

The course teaches presentation skill, communication skill, information-gathering skill, literature-searching skill, and logical thinking skill, which are necessary in master course research in in dentistry, by attedning small-group seminars run by the supervisor(s).

Outline

Students attend laboratory seminars and meetings under the guidance of supervisors to acquire the basick research ability in dentistry.

4. Course Objective(s)

A student is supposed to acquire presentation skill, communication skill, information-gathering skill, literature-searching skill, and logical thinking skill, which are necessary in master course research in in dentistry.

5. Format

Practical training in laboratory seminars and meatings under the guidance of supervisors or other staff in the department in man-to-man or a small-group environment.

6. Course Description and Timetable

To be specified by the supervisor(s)

7. Grading System

To be specified by the supervisor(s)

8. Prerequisite Reading

To be specified by the supervisor(s)

9. Reference Materials

To be specified by the supervisor(s)

10. Important Course Requirements

To be specified by the supervisor(s)

11. Office hours

To be specified by the supervisor(s)

12. Note(s) to students

(None)

Practice of Dental Science

(Code: 3008 1st year 4 units)

1. Instructor(s)

The supervisor (and the vice supervisor)

2. Classroom/Lab

To be specified by the supervisor(s)

3. Course Purpose and Outline

Course Purpose

The course teaches practical research methods, techniques, equipment-handling, data analysis and problem-solving, which are necessary in master course research in dental science.

Outline

Students learn techniques in bioscience and bioengineering under the guidance of supervisors in man-to-man or a small-group environment.

4. Course Objective(s)

A student is supposed to acquire practical research methods, techniques, equipment-handling, data analysis and problem-solving, which are necessary in master course research in dental science.

5. Format

Practical research training in laboratories under the guidance of supervisors or other staff in the department in man-to-man or a small-group environment.

6. Course Description and Timetable

To be specified by the supervisor(s)

7. Grading System

To be specified by the supervisor(s)

8. Prerequisite Reading

To be specified by the supervisor(s)

9. Reference Materials

To be specified by the supervisor(s)

10. Important Course Requirements

To be specified by the supervisor(s)

11. Office hours

To be specified by the supervisor(s)

12. Note(s) to students

(None)

Seminar of Oral Health Science

(Code: 3009 1st year 4 units)

1. Instructor(s)

The supervisor (and the vice supervisor)

2. Classroom/Lab

To be specified by the supervisor(s)

3. Course Purpose and Outline

Course Purpose

The course teaches presentation skill, communication skill, information-gathering skill, literature-searching skill, and logical thinking skill, which are necessary in master course research in in oral health, by attedning small-group seminars run by the supervisor(s).

Outline

Students attend laboratory seminars and meetings under the guidance of supervisors to acquire the basick research ability in oral health.

4. Course Objective(s)

A student is supposed to acquire presentation skill, communication skill, information-gathering skill, literature-searching skill, and logical thinking skill, which are necessary in master course research in in oral health.

5. Format

Practical training in laboratory seminars and meatings under the guidance of supervisors or other staff in the department in man-to-man or a small-group environment.

6. Course Description and Timetable

To be specified by the supervisor(s)

7. Grading System

To be specified by the supervisor(s)

8. Prerequisite Reading

To be specified by the supervisor(s)

9. Reference Materials

To be specified by the supervisor(s)

10. Important Course Requirements

To be specified by the supervisor(s)

11. Office hours

To be specified by the supervisor(s)

12. Note(s) to students

(None)

Practice of Oral Health Science

(Code: 3010 1st year 4 units)

1. Instructor(s)

The supervisor (and the vice supervisor)

2. Classroom/Lab

To be specified by the supervisor(s)

3. Course Purpose and Outline

Course Purpose

The course teaches practical research methods, techniques, equipment-handling, data analysis and problem-solving, which are necessary in master course research in oral health science.

Outline

Students learn techniques in bioscience and bioengineering under the guidance of supervisors in man-to-man or a small-group environment.

4. Course Objective(s)

A student is supposed to acquire practical research methods, techniques, equipment-handling, data analysis and problem-solving, which are necessary in master course research in oral health science.

5. Format

Practical research training in laboratories under the guidance of supervisors or other staff in the department in man-to-man or a small-group environment.

6. Course Description and Timetable

To be specified by the supervisor(s)

7. Grading System

To be specified by the supervisor(s)

8. Prerequisite Reading

To be specified by the supervisor(s)

9. Reference Materials

To be specified by the supervisor(s)

10. Important Course Requirements

To be specified by the supervisor(s)

11. Office hours

To be specified by the supervisor(s)

12. Note(s) to students

(None)

Seminar of Science and Engineering

(Code: 3011 1st year 4 units)

1. Instructor(s)

The supervisor (and the vice supervisor)

2. Classroom/Lab

To be specified by the supervisor(s)

3. Course Purpose and Outline

Course Purpose

The course teaches presentation skill, communication skill, information-gathering skill, literature-searching skill, and logical thinking skill, which are necessary in master course research in in Science and Engineering, by attedning small-group seminars run by the supervisor(s).

Outline

Students attend laboratory seminars and meetings under the guidance of supervisors to acquire the basick research ability in Science and Engineering.

4. Course Objective(s)

A student is supposed to acquire presentation skill, communication skill, information-gathering skill, literature-searching skill, and logical thinking skill, which are necessary in master course research in in Science and Engineering.

5. Format

Practical training in laboratory seminars and meatings under the guidance of supervisors or other staff in the department in man-to-man or a small-group environment.

6. Course Description and Timetable

To be specified by the supervisor(s)

7. Grading System

To be specified by the supervisor(s)

8. Prerequisite Reading

To be specified by the supervisor(s)

9. Reference Materials

To be specified by the supervisor(s)

10. Important Course Requirements

To be specified by the supervisor(s)

11. Office hours

To be specified by the supervisor(s)

12. Note(s) to students

(None)

Practice of Science and Engineering

(Code: 3012 1st year 4 units)

1. Instructor(s)

The supervisor (and the vice supervisor)

2. Classroom/Lab

To be specified by the supervisor(s)

3. Course Purpose and Outline

Course Purpose

The course teaches practical research methods, techniques, equipment-handling, data analysis and problem-solving, which are necessary in master course research in science and engineering.

Outline

Students learn techniques in bioscience and bioengineering under the guidance of supervisors in man-to-man or a small-group environment.

4. Course Objective(s)

A student is supposed to acquire practical research methods, techniques, equipment-handling, data analysis and problem-solving, which are necessary in master course research in science and engineering.

5. Format

Practical research training in laboratories under the guidance of supervisors or other staff in the department in man-to-man or a small-group environment.

6. Course Description and Timetable

To be specified by the supervisor(s)

7. Grading System

To be specified by the supervisor(s)

8. Prerequisite Reading

To be specified by the supervisor(s)

9. Reference Materials

To be specified by the supervisor(s)

10. Important Course Requirements

To be specified by the supervisor(s)

11. Office hours

To be specified by the supervisor(s)

12. Note(s) to students

(None)

Human Anatomy・Oral Anatomy, Histology and Embryology

(Code: 3013・3014 1st year 1 units)

１. Instructor(s)

Professors: Sumio TERADA, Shunichi SHIBATA, Takao NAKATA, Keiichi AKITA
Associate Professors: Makoto TABATA
Contact persons: Sumio TERADA E-mail: terada.nana@tmd.ac.jp,
Shunichi SHIBATA E-mail: sshibata.mfa@tmd.ac.jp

２. Classroom/Lab

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３. Course Purpose and Outline

Course Purpose

The aim of this course is to provide students with a basic understanding of the morphological organization of the human body, based on human anatomy, oral anatomy, histology and embryology in sufficient depth to form the basis for further research studies.

Outline

Histology (by Profs. NAKATA), Human Anatomy and Embryology (by Prof. AKITA), Neuroanatomy (by Prof. TERADA), and Oral Anatomy (by Profs. SHIBATA), and Oral Histology (by TABATA)

４. Course Objective(s)

(1) To provide an overview of the organization of the human body and to understand its gross structures and cytoarchitectures. (2) To obtain a basic understanding of the techniques as well as viewpoints used to investigate morphological and functional aspects of the human body.

５. Format

Lectures: open to every student interested in attending.

６. Course Description and Timetable

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７. Grading System

Grading will be based on both class participation and an examination (in English or Japanese).

８. Prerequisite Reading

Prerequisite: Basic undergraduate-level textbooks on biomedical sciences

９. Reference Materials

(1) Molecular Cell Biology Lodish et al. Freeman and Co.
(2) Molecular Biology of the Cell, Alberts et al. Garland
(3) Protein Localization by Fluorescence Microscopy Allan edit. Oxford Univ. Press
(4) The Human Brain and Spinal Cord, Heimer, Springer-Verlag
(5) Bones and Cartilage, Hall, Springer-Elsevier
(6) Ten Cate's Oral Histology Nanci, Mosby

１０. Important Course Requirements

Consult your academic advisor in advance on schedule before taking the course.

１１. Office hours

Pre-inquiry by e-mail (terada.nana@tmd.ac.jp *or* sshibata.mfa@tmd.ac.jp) is preferable.

１２．Note(s) to students

None.

Schedule

No	Day Time	Topics Venue	Instructor
1	April 8, 2016 10:30～12:00	Dental Anatomy & Histology (1) (Lecture Room, 6F, Building 3)	Shunichi SHIBATA
2	April 8, 2016 13:00～14:30	Structure and function of human tissue(1) (Lecture Room, 6F, Building 3)	Takao NAKATA
3	April 18, 2016 10:30～12:00	Dental Anatomy & Histology (2) (Lecture Room, 6F, Building 3)	Shunichi SHIBATA
4	April 18, 2016 13:00～14:30	Oral Histology (1) : tooth (Lecture Room, 6F, Building 3)	Makoto TABATA
5	April 19, 2016 10:30～12:00	Structure and function of human body (Lecture Room, 6F, Building 3)	Keiichi AKITA
6	April 20, 2016 10:30～12:00	Structure and function of human tissue(2) (Lecture Room, 6F, Building 3)	Takao NAKATA
7	April 21, 2016 10:30～12:00	Oral Histology (2) : mouth and jaws (Lecture Room, 6F, Building 3)	Makoto TABATA
8	April 22, 2016 10:30～12:00	Introduciton to Human Neuroanatomy (Lecture Room, 6F, Building 3)	Sumio TERADA

Functional Organization of the Human Body

(Code: 3015 1st year 1 units)

1. Instructor(s)

	Name	Department, Position	E-Mail
Director	Izumi Sugihara	Systems Neurophysiology, Professor	isugihara.phy1@tmd.ac.jp
Instructor	Shu Takeda	Physiology and Cell Biology, Professor	shu-tky@umin.ac.jp
	Junko Kurokawa	Bio-informational Pharmacology, Associate Professor	junkokuro.bip@mri.tmd.ac.jp
	Kohichii Tanaka	Molecular Neuroscience, Professor	tanaka.aud@mri.tmd.ac.jp
	Koshi Hashimoto	Preemptive medicine and Metabolism, Associate Professor	khashimoto.mem@tmd.ac.jp
	Yuriko Sugiuchi	Systems Neurophysiology, Associate Professor	ysugiuchi.phy1@tmd.ac.jp
	Shinichi Uchida	Nephrology, Professor	suchida.kid@tmd.ac.jp
	Mamoru Watanabe	Department of Gastroenterology and Hepatology, Professor	mamoru.gast@tmd.ac.jp
	Toshihide Fujie	Integrated pulmonology, Assistant professor	tfujie.pulm@tmd.ac.jp
	Michinori Kubota	Project Research Unit, Associate professor	kubota.nphy@mri.tmd.ac.jp

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

Each organ and tissue of the human body has a particular function to maintain the integrated life activity of the whole body. This course aims at understanding the particular function and its underlying mechanisms, its analysis methodologies and disorders, and diseases caused by its dysfunction.

Outline

Each instructor makes a lecture about the function of a particular organ and tissue which is related to his/her speciality. The lecture covers the characteristics, mechanisms and morphological basis of expression of the function, and the relationship between dysfunction and its associated diseases.

4. Course Objective(s)

Students are supposed to acquire basic knowledge of physiological function and its analysis methology of each main organ and tissue in the human body, which is helpful in their research for thesis and research, and social activities after graduation.

５. Format

Lecture style by way of PC-controlled projector and paper-based (or web-based) handouts.

６. Course Description and Timetable

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７. Grading System

Evaluation is based on participation in and attitude to the lectures (50 %, but 2/3 attendance is required), report (50 %, theme are given below). In case one cannot attend 2/3 of lectures because he/she attends scientific meetings for example, other assignments may be given.

８. Prerequisite Reading

Review of the preceding courses (lectures), morphology lectures in particular, preparation by reading reference books.

９. Reference Materials

Guyton and Hall, Textbook of Medical Physiology, 11th Ed. Elsevier, 2006, ISBN: 978-0-7216-0240-0

Preston and Wilson, Lippincott Illustrated Reviews: Physiology. Lippincott, 2012, ISBN: 978-1609132415

Koeppen, Berne & Levy, Physiology 6th Ed. Mosby Elsevier, 2010, ISBN: 978-4-260-01781-7

１０. Important Course Requirements

It is recommended that students ask questions during a lecture

１１. Office hours

Inquire directly to lecturers of each lecture (refer to the above information)

１２. Note(s) to students

None

Theme of Reports (Essay)

Pick up two lectures in the course that you attended. Describe how that lecture gave you hints or ideas to your plan of research in the master course, or describe how the contents of the lecture may be able to be applied to your research field, in about two pages (A4 size). Do not pick up the lecture by the lecturer who belongs to the same department that you belong to. Rewriting may be required if the submitted report is not enough good. It is important to describe about the content of the lecture.

Deadline: June 24, 2016 (Friday)
Submission place: Education office for the Graduate Courses, Branch 2 (Building 1, West, 1st floor) 03-5803-4534

Schedule

No	Day Time	Topics Venue	Instructor
1	May 16 (Mon) 8:50～10:20	"Mechanisms for heart rhythm formation" (Lecture Room, 6F, Building 3)	Junko Kurokawa
2	May 17 (Tue) 8:50～10:20	"Function of the vestibular system" (Lecture Room, 6F, Building 3)	Yuriko Sugiuchi
3	May 17 (Tue) 14:40～16:10	"Function of the auditory system" (Lecture Room, 6F, Building 3)	Michinori Kuboata
4	May 18 (Wed) 8:50～10:20	"Function of the digestive tract" (Lecture Room, 6F, Building 3)	Mamoru Watanabe
5	May 19 (Thu) 8:50～10:20	"Lung function" (Lecture Room, 6F, Building 3)	Toshihide Fujie
6	May 23 (Mon) 8:50～10:20	"Kidney function" (Lecture Room, 6F, Building 3)	Shinichi Uchida
7	May 24 (Tue) 8:50～10:20	"Thyroid function and systemic regulation by thyroid hormone" (Lecture Room, 6F, Building 3)	Koshi Hashimoto
8	May 25 (Wed) 8:50～10:20	"Ion channels, transporters and receptors" (Lecture Room, 6F, Building 3)	Kohichii Tanaka
9	May 26 (Thu) 8:50～10:20	"Function of the skeletal tissue" (Lecture Room, 6F, Building 3)	Shu Takeda

Pathology

(Code: 3016 1st year 1 units)

1. Instructor(s)

	Name	Department&Title	Contact details
Course Leader	Hitoshi Okazawa	Neuropathology, Professor	okazawa.npat@mri.tmd.ac.jp
Course Lecturer	Masanobu Kitagawa	Comprehensive Pathplogy, Professor	masa.pth2@tmd.ac.jp
	Yoshinobu Eishi	Human Pathology, Professor	eishi.path@tmd.ac.jp
	Ko Kayamori	Oral pathology, Assistant Professor	kayamori.mpa@tmd.ac.jp
	Takumi Akashi	Surgical Pathology, Associate Professor	akashi.path@tmd.ac.jp
	Daisuke Kobayashi	Human Pathology, Assistant Professor	d-koba.pth1@tmd.ac.jp
	Motoji Sawabe	Health Care Sciences, Professor	m.sawabe.mp@tmd.ac.jp

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

This course will equip you with the knowledge and means of research methods to detect lesions morphologically. Furthermore, the course will give you a core understanding of pathology theories that are fundamental in diagnosing and analyzing the causative agents and mechanisms of lesions seen in various diseases.

Outline

Prof Eishi: Introduction to lesion detection and pathology theories
Prof Kitagawa: Medical research for diagnostic pathology
Associate Prof Akashi: Environment and disease
Prof Okazawa: Cell damage, death and aging
Prof Eishi: Abnormal immune system
Assistant Prof Kobayashi: Circulatory disturbance and shock, deformity
Assistant Prof Kayamori: Benign and malignant tumor
Prof Sawabe: Acute and chronic inflammation

4. Course Objective(s)

When researching, or conducting experiments, the skills to examine and carry out analyses of microscopic or ultra-fine morphological changes, characteristics and properties of cells and tissues are thought to be fundamental to have for not only those major in pathology but also those who do not major.
This course aims to provide students with the skills and in-depth knowledge to analyze what elements are abnormal, what the causes of lesions are, and how those causes are triggered.

5. Format

Lectures using PowerPoint and Q&A sessions at the end of the lectures

6. Course Description and Timetable

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7. Grading System

Course Report 50% & Course attendance 50%

8. Prerequisite Reading

Not in particular. However self-study and preparations for lecture topics are expected .

９. Reference Materials

Robbins Pathologic Basis of Disease. 6th Edition. Saunders

１０. Important Course Requirements

Students are required to concentrate during lectures to deepen understanding of the contents.

１１. Office hours

Office hours of lectuerers vary. Email the course leader or lecturers to make an appointment.

１２. Note(s) to students

Related module: 神経疾患総論 (theories of neurological disease)

Schedule

No	Day Time	Topics Venue	Instructor
1	2016/5/9 Mon 10:30～12:00	1. Medical research for diagnostic pathology 2. Infectious Disease Pathology (Lecture Room, 6F, Building 3)	Masanobu Kitagawa
2	2016/5/10 Tue 10:30～12:00	1. Basic Pathology 2. Theories of Pathology (Lecture Room, 6F, Building 3)	Yoshinobu Eishi
3	2016/5/10 Tue 13:00～14:30	1. Damage from environmental pollution and chemicals 2. Damage from physical factors 3. Pathology for nutritional disorders (Lecture Room, 6F, Building 3)	Takumi Akashi
4	2016/5/11 Wed 10:30～12:00	1. Pathology of cell damage and death 2. Pathology of aging (Lecture Room, 6F, Building 3)	Hitoshi Okazawa
5	2016/5/12 Thur 10:30～12:00	1. Theories of immune system 2. Immunological mechanisms of tissue damage 3. Autoimmune disease 4. Biological repair mechanisms (Lecture Room, 6F, Building 3)	Yoshinobu Eishi
6	2016/5/16 Mon 10:30～12:00	1. Pathology of Circulatory disturbance 2. Pathological mechanism of shock 3. Theories for deformity (Lecture Room, 6F, Building 3)	Daisuke Kobayashi
7	2016/5/16 Mon 14:40～16:10	1. Characteristics of benign and malignant tumor 2. Epidemiology of tumor 3. Causative agents of tumor and cancer. (Lecture Room, 6F, Building 3)	Ko Kayamori
8	2016/5/17 Tue 10:30～12:00	1. Pathology of acute inflammation 2. Pathology of chronic inflammation (Lecture Room, 6F, Building 3)	Motoji Sawabe

Environmental/Social Health

(Code: 3017 1st year 1 units)

1. Instructor(s)

Contact person : Kazuo Kawahara E-mail kk.hcm@tmd.ac.jp

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

To understand the roles and mutual relations of the medical and dental sciences and technologies in the society.

Outline

To understand the problems faced to envirnmental and social health, this course employs a systematic educational process that succeeds in integrating multiple disciplines, with a focus on medicine, dentistry, and technology. And we aim at upbringing of a talented person helping a nation and the society.

4. Course Objective(s)

The students are expected to learn how to analyze the environmental and social health using objective indicators as well as the ability to theoretically and systematically discuss what they think would be the optimal solution.

5. Format

To introduce the domestic and foreign documents and papers about the latest envirnmental and social health. And to analyze, discuss and evaluate these contents.

6. Course Description and Timetable

Next Page

7. Grading System

The grade synthesizes and evaluates submitting report contents 50% and participation status 50%.

8. Prerequisite Reading

The recent situation of envirnmental and social health should be investigated through the following books, the internet, etc. including mass media information.

9. Reference Materials

① "Medical Care in Japan", Naoki Ikegami and J. C. Campbell (Chuokoron-Shinsha, Inc.)
② White papers from the Japanese Ministry of Health, Labour and Welfare
③ "National Health Trends 2014/2015" (Health, Labour and Welfare Statistics Association)
④ "Ministry of Health and Welfare: 50-year history"
⑤ "50 Years of Postwar Medical Care", Jiro Arioka (Japan Medical Journal)
⑥ "Public Policy Studies", Edited by Yukio Adachi and Toshimasa Moriwaki (Minerva Shobo)
⑦ "A Primer for Policy Analysis", Edith Stokey and Richard Zeckhauser (Keiso Shobo)
⑧"Forgotten people, forgotten diseases", Peter J. Hotez (Universty of Tokyo Press)
⑨Exploring Personal Genomics, Dudly JT & Karczewski KJ (Oxford University Press)
⑩ "A Practical Guide For Medical Teachers", Edited by Yasuyuki Suzuki and Hiroshi Nishigori (Shinohara Suppanshinsya)
⑪ "Test Standard", Edited by Japan Association for Resarch on Testing (Kaneko Shobo)

１０. Important Course Requirements

None in particular

１１. Office hours

Contact: Kazuo Kawahara, Health Care Management and Planning Dept.; E-mail: kk.hcm@tmd.ac.jp

１２. Note(s) to students

Not particular

Schedule

No	Day	Topics	Instructor
1	18, May, 2016 10:30-12:00	This class of sports dentistry is lectured on sports-related dental injuries, sports mouthguard for prevention, and relations between oral health and sports performance. (Lecture Room, 6F, Building 3)	Toshiaki Ueno
2	19,May, 2016 10:30-12:00	Explain methods of assessment of community health needs and introduce practical examples of community-based health promotion. (Lecture Room, 6F, Building 3)	Keiko Nakamura
3	23,May, 2016 10:30-12:00	To explain the ICT utilization on the medical education. (Information retrieval room, library, 4F, M&D tower)	Atsuhiro Kinoshita
4	24,May, 2016 10:30-12:00	Personal genome and preventive medicine, healthcare (Lecture Room, 6F, Building 3)	Masaaki Muramatsu
5	25,May, 2016 10:30-12:00	Analyses of health care administrative data for quality assessment and hospital management (Lecture Room, 6F, Building 3)	Kiyohide Hushimi
6	26,May, 2016 10:30-12:00	This lecture comments on the evaluation method of the education curriculum of medicine and dentistry, and comments on the introduction to it in Japan. (Lecture Room, 6F, Building 3)	Kouji Araki
7	30,May, 2016 10:30-12:00	To instruct environmental factors affecting tropical infectious diseases, and socio-economical background of Neglected Tropical Diseases (NTD). (Lecture Room, 6F, Building 3)	Nobuo Ohta
8	31,May, 2016 10:30-12:00	Lecture about the social role of forensic dentistry for individual identification. (Lecture Room, 6F, Building 3)	Koichi Sakurada

Oral Health Engineering

(Code: 3043 1st year 2 units)

1. Instructor(s)

Prof. Tetsuya Suzuki (suzuki.opoe@tmd.ac.jp) and Masaomi Ikeda (ikeda.sdt@tmd.ac.jp), Dept. Oral Prosthetic Entgineering, Prof. Hidekazu Takahashi (takahashi.bmoe@tmd.ac.jp) and Toru Yasue (yasue.fpoe@tmd.ac.jp), Dept. Oral Biomaterials Development Engineering,
Asoc. Prof. Meiko Oki (moki.mfoe@tmd.ac.jp), Dept. Basic Oral Health Engineering

2. Classroom/Lab

Next Page

3. Course Purpose and Outline

Course Purpose

The goal of this course is to understand actual applications of various basic researchs and technique supporting oral health engineering, and to obtain knowledge for solving objects in a wide range.

Outline

Various topics related to various basic researchs and technique supporting oral health engineering will introduced through recent textbooks and papers. by instructors of Oral Health Engineering Cource.

4. Course Objective(s)

Students will acquire the fundamental knowledge regarding basic researchs and technique supporting oral health engineering, discuss their development, application, function, and problems, and learn the strategy for promoting fundamental knowledge to specific application.

5. Format

Several professors give sereies of lectures in various themes. The students learn the content of the lecture through the question and discussions

6. Course Description and Timetable

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7. Grading System

The grading is comprehensively evaluated based on participation (50%), question and reports (50%).

8. Prerequisite Reading

None. However, there may be reference texts and books announced beforehand so pleasecheck before each lesson.

9. Reference Materials

Some references may be introduced by instructors prior to their lectures.

10. Important Course Requirements

None.

11. Office hours

Weekdays only: Students must e-mail each instructor in advance in order to make an appointment.

１２．Note(s) to students

Schedule will be changed depending on the number of students.

Schedule

No	Day Time	Topics Venue	Instructor
1	2016/10/5 Wed 8:50～10:20	Digital dentistry Lec 3 room, 3F, Build 2	Tetsuya Suzuki
2	2016/10/5 Wed 10:30～12:00	Objective evaluation method of tooth color Lec 3 room, 3F, Build 2	Masaomi Ikeda
3	2016/10/6 Thu 10:30～12:00	Manufacturing processes for dentistry and their accuracies Lec 3 room, 3F, Build 2	Hidekazu Takahashi
4	2016/10/6 Thu 13:00～14:30	CAD/CAM materials for dental use (1) Lec 3 room, 3F, Build 2	
5	2016/10/12 Wed 8:50～10:20	Intra-oral optical scanning Oral Prosthet Eng Lab 3 room, 3F, Build 2	Tetsuya Suzuki
6	2016/10/12 Wed 10:30～12:00	How to fabricate a precise proshtesis Lec 3 room, 3F, Build 2	Toru Yasue
7	2016/10/19 Wed 8:50～10:20	Design of prostheses using by 3D CAD software CAD/CAM room, 3F, Build 2	Tetsuya Suzuki
8	2016/10/19 Wed 10:30～12:00	Maxillary obturator prostheses Lec 3 room, 3F, Build 2	Meiko Oki
9	2016/10/20 Thu 14:40～16:10	CAD/CAM materials for dental use (2) Lec 3 room, 3F, Build 2	Hidekazu Takahashi
10	2016/10/20 Thu 16:20～17:50	Application of glass fiber for dentistry Lec 3 room, 3F, Build 2	
11	2016/10/26 Wed 14:40～16:10	Wear test for dental composite resins Lec 3 room, 3F, Build 2	
12	2016/11/2 Wed 8:50～10:20	Facial images by using optical scanner Oral Prosthet Eng Lab 3 room, 3F, Build 2	Tetsuya Suzuki
13	2016/11/2 Wed 10:30～12:00	Facial prostheses Lec 3 room, 3F, Build 2	Meiko Oki
14	2016/11/9 Wed 8:50～10:20	3D printing CAD/CAM Practice room, 4F, Build 2	Tetsuya Suzuki
15	2016/11/9 Wed 10:30～12:00	Prostheses for patients with mandibular/tongue defects Lec 3 room, 3F, Build 2	Meiko Oki

Oral Health Care Clinical Training

(Code: 3018 1st year 2 units)

1. Instructor(s)

We instruct students develop skills to provide oral health counseling and oral health promotion, and nurture human resources who can actively contribute the development of oral health promotion.

2. Classroom/Lab

Informe before clinical training

3. Course Purpose and Outline

Course Purpose

To develop skills to provide oral health promotion.

Outline

1) Development of skills to provide oral health counseling and oral health promotion
2) Development of education system for the patients to prevent oral diseases
3) Development of new assessment programs in technical education for oral health care

4. Course Objective(s)

To develop skills to provide oral health counseling and oral health promotion, education system for the patients to prevent oral diseases and new assessment programs in technical education for oral health care

5. Format

Clinical training

6. Course Description and Timetable

Informe before clinical training

7. Grading System

Participation rate of clinical training: 50%, reports about clinical training: 50%

8. Prerequisite Reading

Instruct before clinical training

9. Reference Materials

Instruct before clinical training

10. Important Course Requirements

Need for receiving lectures about dental hospital and reports about each clinical training

11. Office hours

Kayoko Shinada: e-mail adress, shinada.ohp@tmd.ac.jp at any time by e-mail

12. Note(s) to students

Being late and absent of clinical training, get in touch with Kayoko Shinada

Visit Experience and Practice at Hospital Departments

(Code: 3019 1st year 2 units)

1. Instructor(s)

Professor in charge: Dr. Izumi Sugihara
Contact: Education office for the Master Course
TEL:03-5803-4534、Email: grad02@ml.tmd.ac.jp

	Name	Position
Instructors	Shigeru Oda	Associate Professor
	Masayuki Hideshima	Junior Associate Professor
	Mamoru Watanabe	Professor
	Sadao Morita	Junior Associate Professor
	Tatemitsu Rai	Professor
	Michiko Kajiwara	Junior Associate Professor
	Takumi Akashi	Associate Professor
	Shuji Touda	Professor

2. Classroom/Lab

To be announced in the orientation (guidance lecture), which is held in advance. The office will give students announcements about the orientation.

3. Course Purpose and Outline

Course Purpose

Students make a visit to sites of various medical practice in the university hospital in order to understand the roles that medical professionals perform and their actual activities to help people recover and maintain physical and mental health. Students improve their understanding of health and disease, patients' mind, and basic knowledge of top hospital practices.

Outline

Site visits in groups of a small number of students

４. Course Objective(s)

To learn the attitude as a researcher or technician in the medical and dental fields through communication with medical and dental professionals in the hospital, and visiting the practice site of top medical and dental proactices in the university hospital.

５. Format

Students enrolled in this subject will be divided into several groups of a small number. Each group will participate in a five-day rotation in five sites in the hopital. At each site, the faculty teacher will direct your course learning at the site. Grouping is made by the office after the total number of students who take this subjects is known. Details and schedules will be explained in the orientation (guidance lecture) during which the brochure will be distributed. Note that each site may have a different meeting time.

６. Course Description and Timetable

Guidance (about one hour, a few weeks before the hospital visit)

７. Grading System

Grading is based on the student's participation to each site visit (50 %, but more than 2/3 participation is required) and on the essay (50 %). The theme of the essay (planned) is ″Describe what you think about concerning your hospital site visits″. The essay has to be submitted in one month after the visit. Details will be annouced in the guidance lecture.

８. Prerequisite Reading

Attend the orientation (Guidance lecture) and read the handout.

９. Reference Materials

Hospital section of the TMDU overview booklet, 2015. Other reference materials may be mentioned during the visit.

１０. Important Course Requirements

（1）The visit takes place at the true practice areas, prepare enough by reading the handout and behave in a self-conscious and responsible manner as one of the hospital staff.
（2）If you must be absent, submit an absence notice to the office and send a message in advance to the professor in charge. (No absence is approved except in a case of sickness or other particular reasons).
（3）There is a confidentiality obligation (sign a document in advance).
（4）Other notes for the visit
① Wear a clean lab coat.
② Keep normal looks, clothes and manner as a hospital staff.
③ No strong perfume.
④ No whispering.
⑤ Put on your name plate.
⑥ Be punctual with the meeting time.
⑦ Follow the direction of the professor in charge.
⑧ Turn off your cell phone(s).
⑨ Other notes may be give at each visit.

１１. Office hours

Ask the office or professor in charge.

１２. Note(s) to students

Only Year 1 students can enrol in this subject. If too many students want to register to this subject, the number may be limited.

Molecular and Cellular Biology

Code 3020 1st year 2 units

1. Instructors

	Name	Affliation	E.mail
Course director	Yutaka Hata	Department of Medical Biochemistry	yuhammch@tmd.ac.jp
Lecturers	Hidehito Kuroyanagi	Laboratory of Gene Expression	kuroyana.end@tmd.ac.jp
	Takashi Kohda	Department of Epigenetics	tkohda.epgn@mri.tmd.ac.jp
	Johji Inazawa	Department of Molecular Cytogenetic	johinaz.cgen@mri.tmd.ac.jp
	Jun Inoue	Department of Molecular Cytogenetics	jun.cgen@mri.tmd.ac.jp
	Ikuo Nobuhisa	Department of Stem Cell Regulation	nobuhisa.scr@mri.tmd.ac.jp
	Shigeomi Shimizu	Department of Pathological Cell Biology	shimizu.pcb@mri.tmd.ac.jp
	Noriko Sato	Department of Molecular epidemiology	nsato.epi@mri.tmd.ac.jp
	Tamayuki Shinomura	Department of Connective Tissue Regeneration	t.shinomura.trg@tmd.ac.jp
	Miki Yokoyama	Department of Hard Tissue Engineering	m.yokoyama.bch@tmd.ac.jp

2. Location

Please refer to th attached table.

3. Course purpose and Outline

Course purpose

This course is designed to provide students with a fundamental understaing of biochemistry, genetics, and cell biology as related to human diseases.

Outline

Takashi Kohda : Epigenetic regulation of the genome. Genetics and epigenetics: A comparative overview.
Hidehito Kuroyanagi: Regulation of gene expression at the levels of transcription, post-transcriptional processing and translation.
Johji Inazawa : Genomic alterations and human diseases, Human Genome Project, Disease sciences in the post-genomic *era*
Jun Inoue: Gene aberrations and precision cancer medicine
Yutaka Hata : Introduction, review of basal biochemistry, metabolism in cancer
Ikuo Nobuhisa : Selective exploitation of the genomic information and cell differentiation
Shigeomi Shimizu : Studies on the Biochemistry of Mitochondria and Cell Death
Noriko Sato : Genome function, Epigenetic regulation during development, Genetic epidemiology-fundamentals and application
Miki Yokoyama : Structure and Function of Proteins
Tamayuki Shinomura : Molecular biology of extracellular matrix

4. Course Objectives

Through completion of this course, students should be able to explain; 1) human metabolism and its alterations in diseases; 2) the sturcture of genome and epigenetic regulation; and 3) DNA repliation, DNA repair, gene transcription, translation, and protein strucutre.

5. Format

The lecure format is traditional. All lectures will be given by use of the powerpoint slides.

6. Course description and Timetable

A detailed schedule is fouund on the next page.

7. Grading system

Final grade for the course will be determined as a composite of class participation and the final examination. The final examination will be held by use of a mark sheet for all the classes except for the class by Dr. Mie Yokoyama. Dr, Yokoyama will request a report, the subject of which will be given in her lecture.

8. Prerequisite Reading

The students who are not familiar with biology are requested to read through an introductory text such as ″:Life: The Science of Biology″ by David Sadava.

9. Recommended Text Books

Biochemsitry by Berg et al. (W H Freeman & Co (Sd); Molecular Biology of the Cell by Alberts (Garland Science;); Biochemistry and Molecular Biology by Eliott. (Oxford Univ Pr); Molecular Cell Biology by Lodish et al. (W H Freeman & Co); The Language of Life: DNA and the Revolution in Personalized Medicine by Collins (HarperCollins); Textbook of Biochemistry with Clinical Correlations by Devlin (Wiley-Liss). Molecular Cell Biology Eighth Edition by Harvey Lodish et al. (Macmillan Learning, 2016).

10. Important Course Requirements

It is highly recommented that students read the textbooks listed above,

11. Office Hours

You can conact with all lectures through the e-mail.

12. Notes to students

All students are urged to participate in special seminars that will be preiodically given by invited speakers.

Table 1

	Schecule	Topics and Locations	Lecturers
1	5月9日 Monday 8:50～10:20	1. Introduction and course organization. 2. Review of biochemistry. 3. Metabolism in cancer cells. Floor 6, Building 3	Yutaka Hata
2	5月10日 Tuesday 8:50～10:20		
3	5月11日 Wednesday 8:50～10:20	1. Transcription units and gene structure in prokaryotes and eukaryotes 2. Transcription cycles 3. Post-transcriptional processing of pre-mRNAs 4. Quality control of mRNAs 5. Regulation of translation Floor 6, Building 3	Hidehito Kuroyanag
4	5月12日 Thursday 8:50～10:20		
5	5月13日 Friday 13:00～14:30	1. Genome function 2. Higher order chromosome structure and function 3. DNA replication and cell cycle 4. Nutrition and development 5. Epigenetic regulation in early development Floor 6, Building 3	Noriko Sato
6	5月16日 Monday 13:00～14:30		
7	5月17日 Tuesday 13:00～14:30	1. Genetics and epigenetics. – two important studies for heritable information. 2. Basics of epigenetic regulation. 3. Epigenetics in mammals 1 (genomic imprinting). 4. Epigenetics in mammals 2 (somatic cell cloning and gene expression). Floor 6, Building 3	Takashi Kohda
8	5月18日 Wednesday 13:00～14:30		
9	5月19日 Thursday 13:00～14:30	1. Selective exploitation of the genomic information and cell differentiation. Floor 6, Building 3	Ikuo Nobuhisa
10	5月20日 Friday 13:00～14:30	1. Genomic disorders: The genomic basis disease 2. Human Molecular Cytogenetics 3. Recent advances in genomic technologies。 Floor 6, Building 3	Johji Inazawa
11	5月20日 Friday 14:40～16:10	1. Detection of gene aberrations, Precision cancer medicine 2. Genome, transcriptome, Proteome analysis Floor 6, Building 3	Jun Inoue
12	5月23日 Monday 13:00～14:30	1. Fundamentals of genetic epidemiology 2. Application in personalized preemptive healthcare Floor 6, Building 3	Noriko Sato
13	5月24日 Tuesday 13:00～14:30	1. Studies on the Biochemistry of Mitochondria and Cell Death Floor 6, Building 3	Shigeomi Shimizu
14	5月25日 Wednesday 13:00～14:30	1. Structural analysis of membrane proteins 2. Roles of lipids in the localization of proteins on the membrane Floor 6, Building 3	Miki Yokoyama
15	5月26日 Thursday 13:00～14:30	1. Molecular biology of extracellular matrix Floor 6, Building 3	Tamayuki Shinomura

Pharmacology

(Code: 3021 1st year 2 units)

1. Instructor(s)

	Name	Department, Position	E-mail
Director	Junko Kurokawa	Bio-informational Pharmacology, Associate professor	junkokuro.bip@mri.tmd.ac.jp
Instructor	Masashi Nagata	Pharmacokinetics and Pharmacodynamics, Associate professor	mna-mpha@tmd.ac.jp
	Masato Yasuhara	Pharmacokinetics and Pharmacodynamics, Professor	yasuhara.mpha@tmd.ac.jp
	Tsutomu Tanabe	Pharmacology, Professor	t-tanabe.mphm@tmd.ac.jp
	Tetsuya Fukuda	Hematology, Assistant Professor	fuku.hema@tmd.ac.jp
	Hirokazu Tamamura	Medicinal Chemistry, Professor	tamamura.mr@tmd.ac.jp
	Tetsushi Furukawa	Bio-informational Pharmacology, Professor	t_furukawa.bip@mri.tmd.ac.jp
	Kazuhiro Aoki	Bio-Matrix(Pharmacology), Associate Professor	kazu.hpha@tmd.ac.jp
	Hiroyuki Kagechika	Organic and Medicinal Chemistry, Professor	kage.chem@tmd.ac.jp

2. Classroom/Lab

Next Page

3. Course Purpose and Outline

Course Purpose

This course is designed to give the first year master course graduate student an understanding of how drugs (1) work to produce their therapeutic effects to diseases (2) are administered, absorbed, metabolized, excreted and (3) produce adverse effects.

Outline

The course will consist of lectures from 13:00 to 14:30 using PowerPoint slides presentation and handouts in their classroom. The titles of topics are as follows; Overview, Pharmacokinetics, Peptide Pharmaceuticals, Central and Peripheral Nervous System Pharmacology, Cardiology, Hard Tissue Pharmacology, Oncology, Chemical Biology.

4. Course Objective(s)

To develop a working knowledge of pharmacology that will assist the students in pursuing fur

5. Format

Lectures, preparation and review, writing a report on a selected topic

6. Course Description and Timetable

Next Page

7. Grading System

Grades will be calculated as follows: Attendance 25%, Report 50%, and Exam in the classes 25

8. Prerequisite Reading

Review of Physiology class

9. Reference Materials

Will be shown at each class

10. Important Course Requirements

None

11. Office hours

Contact person: Junko Kurokawa Mon-Fri 10:00-17:00 E-mail: junkokuro.bip@mri.tmd.ac.jp

12. Note(s) to students

None

Schedule

No	Day	Topics	Instructor
1	May 27 (Fri) 13:00～14:30	Overview Building 3, 6F lecture room	Junko Kurokawa
2	May 30 (Mon) 13:00～14:30	Pharmacology of Neural Signaling Building 3, 6F lecture room	Tsutomu Tanabe
3	May 31 (Tue) 13:00～14:30	Central Nervous System Pharmacology Building 3, 6F lecture room	
4	Jun 1 (Wed) 13:00～14:30	Pharmacokinetics and Pharmacodynamics (1) Building 3, 6F lecture room	Masashi Nagata
5	Jun 2 (Thu) 13:00～14:30	Steroid Hormones Building 3, 6F lecture room	Hiroyuki Kagechika
6	Jun 3 (Fri) 13:00～14:30	Pharmacology of Anticancer Drugs Building 3, 6F lecture room	Tetsuya Fukuda
7	Jun 6 (Mon) 13:00～14:30	Peptide Drug Discovery (1) Building 3, 6F lecture room	Hirokazu Tamamura
8	Jun 7 (Tue) 13:00～14:30	Peptide Drug Discovery (2) Building 3, 6F lecture room	
9	Jun 8 (Wed) 13:00～14:30	Cardiovascular Pharmacology Building 3, 6F lecture room	Tetsushi Furukawa
10	Jun 9 (Thu) 13:00～14:30	Pharmacokinetics and Pharmacodynamics (2) Building 3, 6F lecture room	Masashi Nagata
11	Jun 10 (Fri) 13:00～14:30	Hard Tissue Pharmacology (1) Building 3, 6F lecture room	Kazuhiro Aoki
12	Jun 13 (Mon) 13:00～14:30	Hard Tissue Pharmacology (2) Building 3, 6F lecture room	
13	Jun 14 (Tue) 13:00～14:30	Peripheral Nervous System Pharmacology Building 3, 6F lecture room	Junko Kurokawa
14	Jun 15 (Wed) 13:00～14:30	Anti-inflammatory Drugs Building 3, 6F lecture room	
15	Jun 16 (Thu) 13:00～14:30	Drug Safety Building 3, 6F lecture room	Masato Yasuhara

Immunology

(Code: 3022 1st year 2 units)

1. Instructor(s)

	Name	Department	Email
Chief instructor	Takeshi Tsubata	Immunology	tsubata.imm@tmd.ac.jp
Instructors	Harumi Suzuki	National Center for Global Health and Medicine	
	Hajime Karasuyama	Immune Regulation	karasuyama.mbch@tmd.ac.j
	Noriko Sorimachi	National Center for Global Health and Medicine	
	Miyuki Azuma	Molecular Immunology	miyuki.mim@tmd.ac.jp
	Masato Kubo	Tokyo University of Science	
	Daisuke Kitamura	Tokyo University of Science	
	Toshiaki Ohteki	Biodefense Research	ohteki.bre@tmd.ac.jp
	Norio Shimizu	Center for Stem Cell and Regenerative Medicine	nshivir@tmd.ac.jp
	Yoshihiro Watanabe	Torii Pharmaceutical Co., Ltd	
	Ji-Yang Wang	Immunology	jywang.imm@mri.tmd.ac.jp

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

To provide the students with the knowledge on the basic mechanisms of immunity, and the opportunity to acquire the ability to extend the basic knowledge to understanding of infection immunity and immunological diseases.

Outline

This course deals with basic principles of the immune system including both innate and acquired immunity, and strategies for regulating the immune system to solve the problems of immunological and infectious diseases.

4. Course Objective(s)

To introduce the students how immune system is developed.
To introduce the students to the basic mechanisms of immune responses.
To introduce the students to practical aspects of immunity including infection immunity, immunological diseases and drug development.
To provide the students with the opportunities to acquire the ability to address immunological problems .

5. Format

Lecture

6. Course Description and Timetable

Next Page

7. Grading System

Examination and Attendance

8. Prerequisite Reading

None

９. Reference Materials

Peter Parham, “The immune system” (Second edition), Garland Science (2005)

１０. Important Course Requirements

Basic knowledge on molecular biology and biochemistry is required.

１１. Office hours

Dates will be determined upon request.

１２. Note(s) to students

None

Schedule

No	Day Time	Topics Venue	Instructor
1	October 7, 2016 8:50～10:20	Antigen recognition (Floor 6, 3rd Bldg.)	Takeshi Tsubata
2	October 7, 2016 10:30～12:00	Antigen recognition (Floor 6, 3rd Bldg.)	
3	October 14, 2016 8:50～10:20	Innate immunity (Floor 6, 3rd Bldg.)	Noriko Sorimachi
4	October 14, 2016 10:30～12:00	Development of B lymphocytes (Floor 6, 3rd Bldg.)	Hajime Karasuyama
5	October 21, 2016 8:50～10:20	T cell development and selection (Floor 6, 3rd Bldg.)	Harumi Suzuki
6	October 21, 2016 10:30～12:00	T cell development and selection (Floor 6, 3rd Bldg.)	
7	October 21, 2016 13:00～14:30	B-cell activation and signal (Floor 6, 3rd Bldg.)	Daisuke Kitamura
8	October 28, 2016 8:50～10:20	Humoral immune reponses (Floor 6, 3rd Bldg.)	Ji-Yang Wang
9	October 28, 2016 10:30～12:00	Humoral immune reponses (Floor 6, 3rd Bldg.)	
10	October 28, 2016 13:00～14:30	T cell activation and immune (Floor 6, 3rd Bldg.)	Miyuki Azuma
11	November 4, 2016 8:50～10:20	Mucosal Immune System (Floor 6, 3rd Bldg.)	Toshiaki Ohteki
12	November 4, 2016 10:30～12:00	Cytokines and T cell responses (Floor 6, 3rd Bldg.)	Masato Kubo
13	November 11, 2016 8:50～10:20	Virus infection an immunity (Floor 6, 3rd Bldg.)	Norio Shimizu
14	November 11, 2016 10:30～12:00	Virus infection an immunity (Floor 6, 3rd Bldg.)	
15	November 18, 2016 8:50～10:20	Drug discovery in immunology field (Floor 6, 3rd Bldg.)	Yoshihiro Watanabe

Developmental and Regenerative Bioscience

(Code: 3023 1st year 2 units)

1. Instructor(s)

Professor Hiroshi Nishina E-mail nishina.dbio@mri.tmd.ac.jp
Professor Ichiro Sekiya E-mail sekiya.arm@tmd.ac.jp
Professor Hiroshi Asahara E-mail asahara.syst@tmd.ac.jp
Professor Tetsuya Taga E-mail taga.scr@tmd.ac.jp
Professor Emi Nishimura E-mail nishscm@tmd.ac.jp
Professor Naoyuki Miyasaka E-mail n.miyasaka.gyne@tmd.ac.jp
Assistant Professor Masayo Harada E-mail harada.fana@tmd.ac.jp
Professor Osamu Hoshi E-mail o-hoshi.aps@tmd.ac.jp
Professor Masami Kanai E-mail mkanai.arc@tmd.ac.jp
Associate Professor Hirayama Jun E-mail hirayama.dbio@mri.tmd.ac.jp
Associate Professor Hidehito Kuroyanagi E-mail kuroyana.end@tmd.ac.jp
Professor Sachiko Iseki E-mail s.iseki.emb@tmd.ac.jp
Associate Professor Kohda, Takashi E-mail tkohda.epgn@tmd.ac.jp
Professor Fumitoshi Ishino E-mail fishino.epgn@tmd.ac.jp
Professor Tomohiro Morio E-mail tmorio.ped@tmd.ac.jp

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

It is the mission of these lectures to provide a wide spectrum of knowledge covering recent advanced in developmental and regenerative biology and basic medicine that can be used by students to conduct their own research projects.

Outline

This course covers the human development from the fertilization to the postnatal maturation with an emphasis on embryonic development. We will discuss how modern molecular and genetic approaches are advancing the fundamentals of perinatal medicine and developmental biology. Special emphasis will be placed on developmental genetic disorders and the prospect of using stem cells in regenerative therapy. An additional objective of the course is to learn about research techniques and their application to currently unresolved issues and envisage new paradigms in medicine.

4. Course Objective(s)

To acquire a wide spectrum of knowledge covering recent advanced in developmental and regenerative biology

5. Format

Lecture

6. Course Description and Timetable

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7. Grading System

Examination and Attendance

8. Prerequisite Reading

Basic knowledge on molecular biology

9. Reference Materials

Scott F. Gilbert Developmental Biology

１０. Important Course Requirements

None

１１. Office hours

Contact person: Professor Hiroshi Nishina, E-mail: nishina.dbio@mri.tmd.ac.jp

１２. Note(s) to students

None

Schedule

No	Day Time	Topics Venue	Instructor
1	October 4, 2016 8：50～10：20	Regenerative medicine for cartilage and meniscus with mesenchymal stem cells (Floor 21, M&D Tower)	Ichiro Sekiya
2	October 4, 2016 10：30～12：00	Development and regeneration of liver (Floor 21, M&D Tower)	Hiroshi Nishina
3	October 11, 2016 8：50～10：20	Development and regeneration of the central nervous system: A view from stem cells (Floor 21, M&D Tower)	Tetsuya Taga
4	October 11, 2016 10：30～12：00	Hair follicle developent, regeneration and aging (Floor 21, M&D Tower)	Emi Nishimura
5	October 18, 2016 8：50～10：20	Development of human embryo and fetus (Floor 21, M&D Tower)	Naoyuki Miyasaka
6	October 18, 2016 10：30～12：00	Development of appendages (Floor 21, M&D Tower)	Masayo Harada
7	October 18, 2016 13：00～14：30	Disorders of growth and development (Floor 21, M&D Tower)	Tomohiro Morio
8	October 25, 2016 8：50～10：20	Human chromosomes observed by atomic force microscopy (Floor 21, M&D Tower)	Osamu Hoshi
9	October 25, 2016 10：30～12：00	Application of experimental animal model for human diseases (Floor 21, M&D Tower)	Masami Kanai
10	October 25, 2016 13：00～14：30	Behavioral and Cognitive Neuroscience (Floor 21, M&D Tower)	Sachiko Iseki
11	November 1, 2016 8：50～10：20	Post-transcriptional regulation of gene expression in development. (Floor 21, M&D Tower)	Hidehito Kuroyanagi
12	November 1, 2016 10：30～12：00	Molecular mechanisms for musculoskeletal systems development (Floor 21, M&D Tower)	Hiroshi Asahara
13	November 1, 2016 13：00～14：30	Research of development and regeneration using small fish as the (Floor 21, M&D Tower)	Hirayama Jun
14	November 8, 2016 8：50～10：20	Molecular biology of the germ cell and fertilization (Floor 21, M&D Tower)	Kohda, Takashi
15	November 8, 2016 10：30～12：00	Epigenetics in (Floor 21, M&D Tower)	Fumitoshi Ishino

Molecular Cell Biology

(Code: 3024 1st year 2 units)

1. Instructor(s)

Chief Instructor:
Toshiaki Ohteki, Professor, ohteki.bre@mri.tmd.ac.jp
Instructor:
Hiroshi Shibuya, Professor, shibuya.mcb@mri.tmd.ac.jp
Hiroshi Nishina, Professor, nishina.dbio@mri.tmd.ac.jp
Fumitoshi Ishino, Professor, fishino.epgn@mri.tmd.ac.jp
Tomoki Nakashima, Professor, naka.csi@tmd.ac.jp
Sachiko Iseki, Professor, s.iseki.emb@tmd.ac.jp
Yumiko Oishi, Associate Professor, yuooishi.dcmm@mri.tmd.ac.jp
Hidenori Ichijo, Professor, ichijo@mol.f.u-tokyo.ac.jp

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

Students will learn basic molecular mechanisms of intra- and inter-cellular information exchange required for cell differentiation, activation and death. The mechanisms are essential for the maintenance of tissue homeostasis and their breakdown cause disease development.

Outline

While individual cell and tissue have distinct and unique function, they show fine-tuned and well-balanced biological activity by exchanging intra- and inter-cellular information in the living body. This course deals with current topics aimed at understanding the molecular mechanisms of intra- and inter-cellular information exchange in a variety of tissues and of how its breakdown causes disease development.

4. Course Objective(s)

Students understand basic principle of intra- and inter-cellular information exchange and mechanisms of the maintenance of tissue homeostasis and its breakdown-associated disease development.

5. Format

Lecture

6. Course Description and Timetable

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7. Grading System

Report (52%) and Attendance (48%)

8. Prerequisite Reading

Nothing in particular

9. Reference Materials

Nothing in particular

10. Important Course Requirements

Nothing in particular

11. Office hours

Discussion with instructor after each class and consultation via email by chief instructor if necessary.

１２．Note(s) to students

Nothing in particular

Schedule

No	Day Time	Topics Venue	Instructor
1	June 17 (Fri) 13:00-14:30	Dendritic cell biology (Lecture Room, 21F, M&D tower)	Toshiaki Ohteki
2	June 20 (Mon) 13:00-14:30	Bone biology (Lecture Room, 21F, M&D tower)	Tomoki Nakashima
3	June 21 (Tue) 13:00-14:30	Mechanisms of craniofacial (Lecture Room, 21F, M&D tower)	Sachiko Iseki
4	June 22 (Wed) 13:00-14:30	Mammalian epigenetics (Lecture Room, 21F, M&D tower)	Fumitoshi Ishino
5	June 23 (Thu) 13:00-14:30	Signaling pathways that regulate liver formation (Lecture Room, 21F, M&D tower)	Hiroshi Nishina
6	June 23 (Thu) 14:40-16:10	Stress signaling in human disease (Lecture Room, 21F, M&D tower)	Hidenori Ichijo
7	June 24 (Fri) 13:00-14:30	Cell signaling in development (Lecture Room, 21F, M&D tower)	Hiroshi Shibuya
8	June 24 (Fri) 14:40-16:10	The molecular mechanisms of chronic inflammation (Lecture Room, 21F, M&D tower)	Yumiko Oishi

Introduction to Medical Neurosciences

(Code: 3025 1st year 2 units)

1. Instructor(s)

Kohichi Tanaka E-mail tanaka.aud@mri.tmd.ac.jp
Hirofumi Fujita
Hitoshi Okazawa E-mail okazawa.npat@mri.tmd.ac.jp
Izumi Sugihara E-mail isugihara.phy1@tmd.ac.jp
Itsuki Ajioka E-mail iajioka.cbir@tmd.ac.jp
Kei Watase E-mail keinuro@tmd.ac.jp
Yuichi Hiraoka
Saeko Ishida
Takahsi Okada
Mikio Hoshino E-mail hoshino@ncnp.go.jp
Takeo Yoshikawa

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

The goal of this course is to provide students with a general introduction to the underlying principles and mechanisms of brain function that give rise to complex cognitive behavior and the overviews on major diseases affecting the nervous system

Outline

This course begins with the study of basic methods used in Neuroscienc and how the nervous system develops. We then move to higher brain function such as learning and memory and the coordination of movement. Next we study the neurochemical bases of brain diseases. Finaly, this course will survey recent events and literature in the field of Neuroscience.

4. Course Objective(s)

・To provide a sytemic introduction to the nervous sytem
・To provide the overview on the bais of major neuropsychiatric disorders
・To expose students to the field of neuroscience

5. Format

Lecture

6. Course Description and Timetable

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7. Grading System

Examination (50%) and Attendance (50%)

8. Prerequisite Reading

Nothing in particular

9. Reference Materials

Mark F. Bear, Barry W. Connors and Michael A. Paradiso, Neuroscience: Exploring the Brain. Lippincott Williams & Wilkins.

１０. Important Course Requirements

Nothing in particular

１１. Office hours

Discussion with instructor after each class and consultation via email by chief instructor if necessary.

１２. Note(s) to students

Nothing in particular

Schedule

No	Day Time	Topics Venue	Instructor
1	June 13, 2016 10:30～12:00	Neuroscience Methods I (Floor 21, M&D Tower)	Kohichi Tanaka
2	June 14, 2016 8:50～10:20	Neuroscience Methods II (Floor 21, M&D Tower)	Izumi Sugihara
3	June 14, 2016 10:30～12:00	Developmental Neurosciece I (Floor 21, M&D Tower)	Mikio Hoshino
4	June 15, 2016 8:50～10:20	Developmental Neurosciece II (Floor 21, M&D Tower)	Itsuki Ajioka
5	June 15, 2016 10:30～12:00	Developmental Neurosciece III (Floor 21, M&D Tower)	
6	June 16, 2016 8:50～10:20	Learning & Memory I (Floor 21, M&D Tower)	Takahsi Okada
7	June 16, 2016 10:30～12:00	Learning & Memory II (Floor 21, M&D Tower)	
8	June 20, 2016 8:50～10:20	Cerebellum (Floor 21, M&D Tower)	Hirofumi Fujita
9	June 20, 2016 10:30～12:00	Glial cells (Floor 21, M&D Tower)	Kohichi Tanaka
10	June 21, 2016 8:50～10:20	Biological Psychiatry I (Floor 21, M&D Tower)	
11	June 21, 2016 10:30～12:00	Biological Psychiatry II (Floor 21, M&D Tower)	Takeo Yoshikawa
12	June 22, 2016 8:50～10:20	Neurological Disease I (Floor 21, M&D Tower)	Kei Watase
13	June 22, 2016 10:30～12:00	Neurological Disease II (Floor 21, M&D Tower)	Hitoshi Okazawa
14	June 23, 2016 8:50～10:20	Epilepsy (Floor 21, M&D Tower)	Saeko Ishida
15	June 23, 2016 10:30～12:00	Contemporary Topics in Neuroscience (Floor 21, M&D Tower)	Kohichi Tanaka

Introduction to Human Molecular Genetics

(Code: 3026 1st year 2 units)

1. Instructor(s)

Professor Johji Inazawa MD, PhD, Professor Tatsuhiro Tsunoda, PhD, Professor Akinori Kimura, MD, PhD, Professor Shinji Tanaka, MD, PhD, FACS, Professor Fumitoshi Ishino, PhD, Professor Toshihiro Tanaka, MD, PhD, Professor Yoshio Miki, MD, PhD, Associate Professor Noriko Sato, MD, PhD, Junior Associate Professor Kenichi Kashimada, MD, PhD, Junior Associate Professor Yoshimitsu Akiyama, PhD, Junior Associate Professor Jun Inoue, PhD, Assistant Professor Makiko Egawa, MD, PhD, Specially Appointed Associate Professor Koshi Hashimoto, MD, PhD,

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

The course is aimed at giving the student basic concepts and knowledge in human genetics and the implementation of personalized medicine in post-genomic *era*.

Outline

The course will include concepts of genomic structure and function, genome variations, cancer genomics and epigenomics, genomic disorders and imprinting, animal models of human diseases, genetic diagnosis, therapy and prevention of human diseases, reproductive genetics, genetic instability, and genetic counseling.

4. Course Objective(s)

The goal is to develop an understanding of human genetics and diseases mechanism for therapeutic potentials.

5. Format

Lecture

6. Course Description and Timetable

Next Page

7. Grading System

Participation in lectures (50%) and examination at the last lecture (50%).

8. Prerequisite Reading

The Language of Life: DNA and the Revolution in Personalized Medicine, Francis Collins, 2011

9. Reference Materials

Human Molecular Genetics, Fourth Edition 4th Edition by Tom Strachan and Andrew Read, ISBN-13: 978-0815341499.

10. Important Course Requirements

not applicable

11. Office hours

9:00-17:00 Contact person: Johji Inazawa. E-mail: johinaz.cgen@mri.tmd.acjp

12. Note(s) to students

not applicable

Schedule

No	Day Time	Topics Venue	Instructor
1	May 30, 2016 8:50～10:20	Basic concepts and knowledge of human genetics 1) History of human genetics, 2) Mendelian disorders Cancer genomics and epigenomics 1) Oncogene and tumor suppressor gene, 2) Multistep carcinogenesis, 2) Molecular target and cancer therapy (Building 3, 6F)	Johji Inazawa
2	May 31, 2016 8:50～10:20	Learn through statistical genetics how human genome variation relates to disease: 1) Human genome variation and statistical genetics, 2) Big data analysis for precision medicine and health science driven preventive medicine. (Building 3, 6F)	Tatsuhiko Tsunoda
3	June 1, 2016 8:50～10:20	Chromatin structure and functional regulation 1) Methods for chromatin modification profiling, 2) Genetic and epigenetic variation in metabolic disease (Building 3, 6F)	Noriko Sato
4	June 1, 2016 10:30～12:00	Mechanism, diagnosis, treatment and prevention of hereditary tumors 1) Mutations of genes and cancer, 2) Identification of the gene responsible for tumor, diagnosis and treatment, 3) Genetic diversity and personalized medicine (Building 3, 6F)	Yoshio Miki
5	June 2, 2016 8:50～10:20	Animal models of human diseases and the gene therapy. To understand the basic of genetically modified animal models and the strategy to elucidate the pathogenesis of diseases. 1) Transgenic and gene targeting technique, 2) Update and the future of the gene therapy (Building 3, 6F)	Koshi Hashimoto
6	June 2, 2016 10:30～12:00	1) Application of knowledge on human genome diversity and bioethics, 2) Guideline for research on human genome, 3) Gene diagnosis and genetic counseling, 4) Translational medicine (Building 3, 6F)	Akinori Kimura
7	June 6, 2016 8:50～10:20	Pathology and Clinical management of Genetic disorders in children 1) Prenatal development of human embryo and prenatal diagnosis, 2) Common genetic disorders in children (Building 3, 6F)	Kenichi Kashimada
8	June 6, 2016 10:30～12:00	Molecular Genetics in human reproduction and development 1)Mechanism of human reproduction and development, 2) Disorders associated with errors in human reproduction (Building 3, 6F)	Makiko Ishikawa
9	June 7, 2016 8:50～10:20	Molecular mechanisms and treatment strategies of refractory cancer 1) Molecular analysis of refractory cancer, 2) Cancer treatment based on the molecular mechanisms (Building 3, 6F)	Shinji Tanaka
10	June 7, 2016 10:30～12:00	Identification of genetic factors involved in the human diseases 1) Genetic factors in human diseases, 2) Family studies to identify the disease gene, 3) Population studies to identify the disease-associated genes (Building 3, 6F)	Akinori Kimura
11	June 8, 2016 8:50～10:20	DNA damage and genetic instability 1) Genetic instability and human disease, 2) Genetic instability and cancer (Building 3, 6F)	Yoshimitsu Akiyama
12	June 8, 2016 10:30～12:00	Methods of genetic analysis for human disease 1) Cell culture and chromosomal analysis, 2) Detection of genetic aberrations in human disease (Building 3, 6F)	Jun Inoue
13	June 9, 2016 8:50～10:20	Mammalian epigenetics in development and growth. 1) Genomic imprinting 2) Human desieases caused by abnormal epigenetic regulation (Building 3, 6F)	Fumitoshi Ishino
14	June 9, 2016 10:30～12:00	Genetic factors that affect pathogenesis of cardiovascular diseases. 1) monogenic diseases, 2) common diseases, 3) pharmacogenomics. (Building 3, 6F)	Toshihiro Tanaka
15	June 13, 2016 8:50～10:20	Implementation of personalized medicine in post-genomic era **(Building 3, 6F)Examination after the lecture course**	Johji Inazawa

Oral Health Generic Care Sciences

(Code: 3027 1st year 2 units)

１. Instructor(s)

Oral health generic care are sciences included oral health and medical health care and welfar. Oral health care is not only prevent and detect oral diseases, but also maintain and improve the nation's health.

２. Classroom/Lab

Next Page

３. Course Purpose and Outline

Course Purpose

Students acquire deep academic knowledge about oral health and medical health care and welfar.

Outline

(1)Outline of oral health generic care
(2)Work forces of oral health generic care
(3)Clinical dentistry and oral health care
(4)Community health network and Assessment of vital function
(5)Social work for people who needs oral health care and welfare
(6)Collaboration of medical health care, welfare, and oral health in a super-aging society
(7)Search and presentation for journal articles on oral health

４. Course Objective(s)

Students acquire deep academic knowledge about oral health and medical health care and welfar.

５. Format

Class lesson.lectures and presentation

６. Course Description and Timetable

Next Page

７. Grading System

Participation rate of lectures: 50%, Document of prsentation:20%, Presentation: 30%

８. Prerequisite Reading

Instruct at class lesson lectures

９. Reference Materials

Instruct at class lesson lectures

１０. Important Course Requirements

Need for presentation with documents

１１. Office hours

Kayoko Shinada: e-mail adress, shinada.ohp@tmd.ac.jp at any time by e-mail

１２. Note(s) to students

Being late and absent of lectures, get in touch with Kayoko Shinada

Schedule

No	Day Time	Topics Venue	Instructor
1 2	2016/10/5(Wed) 8:50～12:00	Outline of oral health generic care (Room 1, Building 1 west 7F,)	Kayoko SHINADA
3 4	2016/10/12(Wed) 8:50～12:00	Work forces of oral health generic care (Room 1, Building 1 west 7F,)	Keiko KONDO
5 6	2016/10/19(Wed) 8:50～12:00	Clinical dentistry and oral health care (Room 1, Building 1 west 7F,)	Shinichi ARAKAWA
7 8	2016/10/26(Wed) 8:50～12:00	Search for journal articles on oral health (Room 1, Building 1 west 7F,)	Kayoko SHINADA
9 10	2016/11/2(Wed) 8:50～12:00	Community health network (Room 1, Building 1 west 7F,)	Keiko ENDO*
11	2016/11/9(Wed) 8:50～10:20	Assessment of vital function (Room 1, Building 1 west 7F,)	Yuki OHARA
12	2016/11/9(Wed) 10:30～12:00	Social work for people who needs oral health care and welfare (Room 1, Building 1 west 7F,)	Keiko ENDO**
13	2016/11/16(Wed) 8:50～10:20	Collaboration of medical health care, welfare, and oral health in a super aging society (Room 1, Building 1 west 7F,)	Junichi FURUYA
14	2016/11/16(Wed) 10:30～12:00	Dysphagia rehabilitation and oral health science in a super-aging society (Room 1, Building 1 west 7F,)	
15	2016/11/16(Wed) 13:00～14:30	Presentation and discussion (Room 1, Building 1 west 7F,)	Kayoko SHINADA

Keiko ENDO* and Keiko ENDO** is a different teacher.

Bioinformatics

(Code: 3028 1st year 2 units)

1. Instructor(s)

Toshihiro Tanaka, Professor, Department of Human Genetics and Disease Diversity
Shumpei Ishikawa, Professor, Medical Research Institute
Yukinori Okada, Professor, Osaka University
Kevin Urayama, Professor, St. Luke's International University
Kohsuke Tanimoto, Assistant Professor, Medical Research Institute
Daisuke Kohmura, Assistant Professor, Medical Research Institute
Daichi Shigemizu, Junior Associate Professor, Medical Research Institute
Akihiro Fujimoto, Vice-Laboratory Head, RIKEN Center for Integrative Medical Sciences
Kengo Sato, Junior Associate Professor, Keio University
Noriko Tanaka, National Center for Global Health and Medicine
Seiya Imoto,Professor, the University of Tokyo

2. Classroom/Lab

Next Page

3. Course Purpose and Outline

Course Purpose

The purpose of this course is to learn bioinformatics comprehensively, from the definition to its usage in various fields including basic/clinical research or clinical settings. Cutting-edge knowledge will also be presented in the course.

Outline

Humans are diverse organisms, and one area that this diversity is particularly exhibited is in the medical field such as in the way we develop disease and show resistance to treatment and drug side-effects. In order to understand this diversity, examination of inter-individual variation in our genetics and environment is essential by integrating both DNA and mRNA analysis (wet laboratory-based), together with data-mining and the statistical analytic evaluations of these data (dry lab). The purpose of this course is to provide the necessary foundation required to begin applying this integrative approach to individual research.

4. Course Objective(s)

a. Learn the basic procedures for statistical analysis of genetic data
b. Understand the current state of research of this field and its applications in medical practice

5. Format

Lecture

6. Course Description and Timetable

Next Page

7. Grading System

Submission of report (40%) and Attendance (60%)

8. Prerequisite Reading

It is desirable to read below-mentioned material to fully understand the lectures.

9. Reference Materials

Bioinformatics for Beginners: Genes, Genomes, Molecular Evolution, Databases and Analytical Tools (ISBN-10: 0124104711)

１０. Important Course Requirements

Reports should be submitted at the last class. The subject will be shown at the first class.

１１. Office hours

Mon, Tue, Thu: AM 9:00-10:00; Wed, Fri: PM 6:00-7:00 Call ex 4660 beforehand.

１２. Note(s) to students

Nothing in particular

Schedule

No	Day Time	Topics Venue	Instructor
1	May 6, 2016 13:00～14:30	Introduction to Informatics （Floor 21, M&D Tower）	Toshihiro Tanaka
2	May 13, 2016 8:50～10:20	Introduction to Statistical Genetics 1 （Floor 21, M&D Tower）	Yukinori Okada
3	May 13, 2016 10:30～12:00	Introduction to Statistical Genetics 2 （Floor 21, M&D Tower）	
4	May 20, 2016 8:50～10:20	Introduction to Epidemiological （Floor 21, M&D Tower）	Kevin Urayama
5	May 20, 2016 10:30～12:00	Introduction to Epidemiological （Floor 21, M&D Tower）	
6	May 27, 2016 8:50～10:20	Disease Genomics 1 （Floor 4, M&D Tower）	Shumpei Ishikawa
7	May 27, 2016 10:30～12:00	Introduction to RNA Sequence Analysis （Floor 21, M&D Tower）	Kengo Sato
8	June 3, 2016 8:50～10:20	Disease Genomics 2 （Floor 4, M&D Tower）	Daisuke Kohmura
9	June 3, 2016 10:30～12:00	Informatics at Clinical Rearch （Floor 21, M&D Tower）	Noriko Tanaka
10	June 10, 2016 8:50～10:20	Cancer Genomics 1 （Floor 21, M&D Tower）	Akihiro Fujimoto
11	June 10, 2016 10:30～12:00	Cancer Genomics 2 （Floor 21, M&D Tower）	
12	June 17, 2016 8:50～10:20	Next Generation Sequencer （Floor 21, M&D Tower）	Kosuke Tanimoto
13	June 17, 2016 10:30～12:00	Artificial Intelligence and Medicine （Floor 21, M&D Tower）	Seiya Imoto
14	June 24, 2016 8:50～10:20	Exome Analysis of Inherited Diseases （Floor 21, M&D Tower）	Daichi Shigemizu
15	June 24, 2016 10:30～12:00	Precision Medicine and Social trends （Floor 21, M&D Tower）	Toshihiro Tanaka

Disease OMICS Informatics

(Code: 3029 1st year 2 units)

1. Instructor(s)

Tatsuhiko Tsunoda (Professor, Department of Medical Science Mathematics; tsunoda.mesm@mri.tmd.ac.jp)
Daichi Shigemizu (Junior Associate Professor, Department of Medical Science Mathematics;d.shigemizu.mesm@mri.tmd.ac.jp)
Fuyuki Miya (Assistant Professor, Department of Medical Science Mathematics; miya.mesm@mri.tmd.ac.jp)
Hidewaki Nakagawa (Laboratory Head, RIKEN Integrative Medical Sciences; hidewaki@ims.u-tokyo.ac.jp)
Mamoru Kato (Unit Leader, National Cancer Center; mamkato@ncc.go.jp)
Hisaaki Shinohara (Senior Researcher, RIKEN Inegrative Medical Sciences; hisaaki.shinohara@riken.jp)

2. Classroom/Lab

Next Page

3. Course Purpose and Outline

Course Purpose

To understand disease omics and methodologies for analyzing them

Outline

In this lecture, we discuss how to apply bioinformatics techniques to medicine and medical science. Nowadays, it has been keenly desired to establish personalized/precision medicine on the basis of applying optimum therapy for each patient, and also to predict individuals' disease risk for preventing disease. For these, integrative analyses of omics-data, as well as mathematical modeling approaches to disease, are necessary. We look at how modern research on omics and systems analyses, including metagenomic and trans-omic analyses, have been/will be applied with intractable diseases, cancer, and common diseases. We also discuss future perspectives on medical systems for establishing personalized/precision/preventive medicine. No prior knowledge in bioinformatics is required.

4. Course Objectives

To achieve the level that you can explain:
- Why mathematics, e.g. statistical genetics, and informatics are necessary for modern medical science.
- Typical methodologies of getting omic data from disease patients.
- Methodologies of analyzing disease omic data, and how to discover genes causal of/related to disease.
- Concrete examples to understand disease with systems approach.
- How to apply the optimum therapy for each patient and/or how to prevent disease from indivisuals.

5. Format

Lectures and practices with computers.

6. Course Description and Timetable

Next Page

7. Grading System

Examination (40%) and Attendance (60%)

８. Prerequisite Reading

It is desired to learn beforehand with web search about the human genome project, gene polymorphism, genome-wide association study (GWAS), linkage disequilibrium, next-generation sequencers.

９. Reference Materials

Hand-outs will be provided.

１０. Important Course Requirements

When you can not attend the lecture(s), make copies of hand-outs asking other students for it. Do not eat/drink during the course. Power-off your mobile/smart-phone and do not put it on your desk. In it is necessary for accessibilities, declare it beforehand. Do not talk for private.

１１. Office hours

16:30-18:00 on Tuesday, Professor's office (Tatsuhiko Tsunoda; 25th floor of M&D tower)

１２. Note(s) to students

Nothing

Schedule

No	Day Time	Topics Venue	Instructor
1	13th, May (Fri) 16:20-17:50	Introductory to disease omics informatics (Lecture room 1, 21F, M&D tower)	Tatsuhiko Tsunoda
2	16th, May (Mon) 16:20-17:50	Genome-wide association study (Lecture room 1, 21F, M&D tower)	Tatsuhiko Tsunoda
3	17th, May (Tue) 16:20-17:50	Prediction for precision medicine (Lecture room 1, 21F, M&D tower)	Daichi Shigemizu
4	20th, May (Fri) 16:20-17:50	GWAS practice 1 (Information retrieval room, library, 4F, M&D tower)	Tatsuhiko Tsunoda, Daichi Shigemizu, Fuyuki Miya
5	23th, May (Mon) 16:20-17:50	GWAS practice 2 (Information retrieval room, library, 4F, M&D tower)	Tatsuhiko Tsunoda, Daichi Shigemizu, Fuyuki Miya
6	24th, May (Tue) 14:40-16:10	Next-generation sequencer (NGS) data analysis (Lecture room 1, 21F, M&D tower)	Tatsuhiko Tsunoda, Fuyuki Miya
7	27th, May (Fri) 14:40-16:10	NGS data analysis practice 1 (Information retrieval room, library, 4F, M&D tower)	Tatsuhiko Tsunoda, Daichi Shigemizu, Fuyuki Miya
8	27th, May (Fri) 16:20-17:50	NGS data analysis practice 2 (Information retrieval room, library, 4F, M&D tower)	Tatsuhiko Tsunoda, Daichi Shigemizu, Fuyuki Miya
9	30th, May (Mon) 14:40-16:10	Gene expression analysis (Lecture room 1, 21F, M&D tower)	Fuyuki Miya
10	6th, June (Mon) 14:40-16:10	Chemo-informatics and drug repositioning (Lecture room 1, 21F, M&D tower)	Daichi Shigemizu
11	10th, June (Fri) 16:20-17:50	Epigenome analysis (Lecture room 1, 21Fr, M&D tower)	Tatsuhiko Tsunoda
12	13th, June (Mon) 14:40-16:10	Cancer genome/omics analysis (Lecture room 1, 21F, M&D tower)	Hidewaki Nakagawa
13	13th, June (Mon) 16:20-17:50	Bioinformatics for cancer precision medicine (Lecture room 1, 21F, M&D tower)	Mamoru Kato
14	20th, June (Mon) 14:40-16:10	Non-linear network disease mathematics model (Lecture room 1, 21F, M&D tower)	Hisaaki Shinohara
15	20th, June (Mon) 16:20-17:50	Perspective of disease omic informatics (Lecture room 1, 21F, M&D tower)	Tatsuhiko Tsunoda

Introduction to Chemistry and Biology of Biofunctional Molecules

(Code: 3030 1st year 2 units)

1. Instructor(s)

[Chief Instructor] Prof. Hirokazu Tamamura; Dept. Med. Chem.; E-mail: tamamura.mr@tmd.ac.jp
Prof. Hiroyuki Kagechika; Prof. Takamitsu Hosoya; Prof. Nobumoto Watanabe; Dr. Tomoya Hirano; Dr. Wataru Nomura; Dr. Suguru Yoshida; Dr. Shuichi Mori; Dr. Satoru Ito

2. Classroom/Lab

Next Page

3. Course Purpose and Outline

Course Purpose

The purpose of this course is to fully comprehend basic and application concerning biofunctional molecules.

Outline

This course deals with fundamentals and recent topics related to various biofunctional molecules, such as hormones and proteins, related to gene functions and/or cellular signal transduction. This course also covers the research techniques and their applications in the field of medicinal chemistry and chemical biology.

4. Course Objective(s)

This course objective is to comprehend structures and functions of various bioactive compounds, such as hormones and proteins, and DNA constructing genome in levels of atoms and molecules, and then to learn recent research topics concerning chemical syntheses, structural analyses and applications of these molecules.

5. Format

Lecture

6. Course Description and Timetable

Next Page

7. Grading System

Final examination (80 points) and Attendance (20 points)

8. Prerequisite Reading

Preparation based on reference materials and homepages of the instructors is required.

9. Reference Materials

L. Schreiber, T. Kapoor, G. Wess (eds.) Chemical Biology, WILEY-VCH; Laudet, V & Gronemeyer, H. (eds) The Nuclear Receptors FactsBook, Academic Press; M. Ptashne & A. Gann Genes & Signals, CSHL Press.

10. Important Course Requirements

Nothing in particular

11. Office hours

Between one week before and after this course; 3 - 5 pm on Monday - Friday
[Chief Instructor] Prof. Hirokazu Tamamura; Dept. Med. Chem.;
Rm 603B, Floor 6, Bldg 21

12. Note(s) to students

Nothing in particular

Schedule

No	Day Time	Topics Venue	Instructor
1 2	October 3, 2016 8:50～12:00	Chemical modification of biomolecules (Floor 1, Building 22)	Hosoya Takamitsu Yoshida Suguru
3 4	October 24, 2016 8:50～12:00	Strategy for the development of functional molecules (Meeting Room 2, Floor 1, Building 22)	Hirano Tomoya
5 6	October 31, 2016 8:50～12:00	Genom chemistry: basic and application (Meeting Room 2, Floor 1, Building 22)	Nomura Wataru
7 8	November 7, 2016 8:50～12:00	Medicinal chemistry of nuclear receptor (Meeting Room 2, Floor 1, Building 22)	Kagechika Hiroyuki
9 10	November 14, 2016 8:50～12:00	Personalized Medicine：Reality (Meeting Room 2, Floor 1, Building 22)	Ito Satoru
11	November 15, 2016 8:50～12:00	Peptide & protein chemistry (Meeting Room 2, Floor 1, Building 22)	Tamamura Hirokazu
12	November 15, 2016 10:30～12:00	Biotransformation and protein engineering (Meeting Room 2, Floor 1, Building 22)	Mori Shuichi
13	November 15, 2016 13:00～14:30	Peptide & protein chemistry (Meeting Room 2, Floor 1, Building 22)	Tamamura Hirokazu
14 15	November 21, 2016 8:50～12:00	Regulation of cell growth and differentiation by biofunctional molecules (Meeting Room 2, Floor 1, Building 22)	Watanabe Nobumoto
	2016/11/xx 10:00～11:30	Examination (Floor xx, Building xx)	TBD

Chemical Biology

(Code: 3031 1st year 2 units)

1. Instructor(s)

Name	Department, Title	E-mail
Hiroyuki Kagechika	Organic and Medicinal Chemistry, Professor	kage.chem@tmd.ac.jp
Hirokazu Tamamura	Medicinal Chemistry, Professor	tamamura.mr@tmd.ac.jp
Takamitsu Hosoya	Chemical Bioscience, Professor	thosoya.cb@tmd.ac.jp
Soichi Kojima	RIKEN Molecular and Chemical Somatology, Visiting Professor	skojima@postman.riken.go.jp
Mikiko Sodeoka	RIKEN Molecular and Chemical Somatology, Visiting Professor	sodeoka@riken.jp
Tomoya Hirano	Organic and Medicinal Chemistry, Associate Professor	hira.chem@tmd.ac.jp
Suguru Yoshida	Chemical Bioscience, Associate Professor	s-yoshida.cb@tmd.ac.jp
Mikiya Suda	Astellas Pharm Inc, Senior Director	
Jun Takasaki	Astellas Pharm Inc, Director	
Hiroki Shirai	Astellas Pharm Inc, Executive Fellow	

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

The purpose of this course is to understand the basic and application about chemical biology field. Chemical biology is a new and significant field of bioscience. This field includes the research to solve the biological problems at the molecular level or to
regulate the biological systems by using the techniques, knowledge and ideas of chemistry.

Outline

This course deals with the overview of the chemical biology field including some topics of recent research, including organic chemistry, medicinal chemistry, genomic drug discovery, and bioinformatics.

4. Course Objective(s)

This course objective is to comprehend the methodolody and tecqnology of chmical biology, including molecular design, organic synthesis, biological functional analysis, and drug discovery.

5. Format

Lecture

6. Course Description and Timetable

Next Page

7. Grading System

Final examination (60%) and Attendance/Discussion (40%)

8. Prerequisite Reading

review on the fundamental organic chemistry

9. Reference Materials

L. Schreiber, T. kapoor, G. Wess (eds.) Chemical Biology, WILEY-VCH
H. Osada (ed.) Bioprobes, Springer
Kamerling, J. P. (ed) Comprehensive Glycoscience From Chemistry to System Biology, Elsevier
Annes, J. P.; Munger, J. S.; Rifkin, D. B. J Cell Sci 116:217-224, 2003.
Liby, K. T.; Yore, M. M.; Sporn, M. B. Nature Reviews Cancer 7:357-369, 2007.
Ferrara, N,; Kerbel, R. S. Nature 438:967-974, 2005.

10. Important Course Requirements

none

11. Office hours

April 12 – June 22, 15:00–17:00
Hiroyuki Kagechika, kage.chem@tmd.ac.jp
Rm 609A, Floor 6, Bldg 21

12. Note(s) to students

none

Schedule

No	Day Time	Topics Venue	Instructor
1	April 19 (Tue) 10:30～12:00	Overview of Chemical Biology (M&D tower 21F lecture room 1)	Hiroyuki Kagechika Tomoya Hirano
2	May 10 (Tue) 10:30～12:00	Organic Chemistry for Chemical Biology (M&D tower 21F lecture room 1)	Takamitsu Hosoya Suguru Yoshida
3	May 10 (Tue) 13:00～14:30	Organic Chemistry for Chemical Biology (M&D tower 21F lecture room 1)	
4	May 18 (Wed) 8:50～10:20	Chemical Biology and Drug Discovery (Building 22, 1 F, seminor room 2)	Mikiya Suda
5	May 18 (Wed) 10:30～12:00	Chemical Biology and Drug Discovery (Building 22, 1 F, seminor room 2)	
6	May 25 (Wed) 8:50～10:20	Informatics for Drug Discovery (Building 22, 1 F, seminor room 2)	Hiroki Shirai
7	May 25 (Wed) 10:30～12:00	Informatics for Drug Discovery (Building 22, 1 F, seminor room 2)	
8	June 1 (Wed) 8:50～10:20	Chemical Biology and Biomimetic (Building 22, 1 F, seminor room 2)	Hirokazu Tamamura
9	June 1 (Wed) 10:30～12:00	Chemical Biology and Biomimetic (Building 22, 1 F, seminor room 2)	
10	June 7 (Tue) 8:50～10:20	Synthetic Organic Chemistry and Chemical Biology (Building 22, 1 F, seminor room 2)	Mikiko Sodeoka
11	June 7 (Tue) 10:30～12:00	Synthetic Organic Chemistry and Chemical Biology (Building 22, 1 F, seminor room 2)	
12	June 14 (Tue) 8:50～10:20	Clarify Pathogenesis of Diseases by Chemical Biological Approach (Building 22, 1 F, seminor room 2)	Soichi Kojima
13	June 14 (Tue) 10:30～12:00	Clarify Pathogenesis of Diseases by Chemical Biological Approach (Building 22, 1 F, seminor room 2)	
14	June 22 (Wed) 8:50～10:20	Genomic Drug Discovery in Chemical Biology (Building 22, 1 F, seminor room 2)	Jun Takasaki
15	June 22 (Wed) 10:30～12:00	Genomic Drug Discovery in Chemical Biology (Building 22, 1 F, seminor room 2)	

Practical Chemical Biology

(Code: 3032 1st year 2 units)

1. Instructor(s)

	Name	Department	Email
Chief Instructor	Dr.Takamitsu Hosoya	Chemical Bioscience	thosoya.cb@tmd.ac.jp
Instuctors	Dr.Hiroyuki Kagechika	Organic and Medicinal Chemistry	kage.chem@tmd.ac.jp
	Dr.Takeshi Tsubata	Immunology	tsubata.imm@tmd.ac.jp
	Dr.Hirokazu Tamamura	Medicinal Chemistry	tamamura.mr@tmd.ac.jp
	Dr.Tomoya Hirano	Organic and Medicinal Chemistry	hira.chem@tmd.ac.jp
	Dr.Wataru Nomura	Medicinal Chemistry	nomura.mr@tmd.ac.jp
	Dr.Suguru Yoshida	Chemical Bioscience	s-yoshida.cb@tmd.ac.jp
	Dr.Mari Yuasa	Organic and Medicinal Chemistry	myuasa.chem@tmd.ac.jp
	Dr.Shuichi Mori	Organic and Medicinal Chemistry	s-mori.chem@tmd.ac.jp
	Dr.Takaaki Mizuguchi	Medicinal Chemistry	mizuguchi.mr@tmd.ac.jp
	Dr.Yoshitake Nishiyama	Chemical Bioscience	nishiyama.cb@tmd.ac.jp
	Dr.Naoko Matsubara	Immunology	n-matsubara.imm@tmd.ac.jp

2. Classroom/Lab

Next Page

3. Course Purpose and Outline

Course Purpose

Obtaining basic knowledge and skills of experiments for chemical biology researches.

Outline

This course deals with the experiments in the field of chemical biology. Chemical biology is the research field to solve the biological problems at the molecular level or to regulate the biological systems by using the techniques, knowledge and ideas of chemistry. The experiments include the structural and spectroscopic analyses of small molecules, biological screening of chemical library, and their applications to the biological systems. Lectures for each topic are also provided.

4. Course Objective(s)

Obtaining basic knowledge and skills of experiments for chemical biology researches, including molecular structure analyses by NMR ans MS, fluorescent molecules, biological screening, and biological analysis of bioactive compounds.

5. Format

Lecture & Lab

6. Course Description and Timetable

Next Page

7. Grading System

Attendance (50%) and report (50%).

8. Prerequisite Reading

Look through the textbook that is distributed on the first day.

９. Reference Materials

Silverstein R. M et al. (eds.) Spectrometric Identification of Organic Compounds (John Wiley &Sons); L. Schreiber, T. kapoor, G. Wess (eds.) Chemical Biology, WILEY-VCH.

１０. Important Course Requirements

None

１１. Office hours

Contact instructors as needed.

１２. Note(s) to students

When the number of applicants exceeds the quota, the same course may be held at June 27 (Mon.)～July 1 (Fri.)

Schedule

No	Day Time	Topics Venue	Instructor
1 2 3	July 4, 2016 14:40～19:30	Fundamental Chemical Biology Technique Floor 3, Building 21	Dr. T. Hosoya Dr. H. Kagechika
4 5 6	July 5, 2016 14:40～19:30	Molecular Structure Analyses based on NMR and MS Floor 1, Building 21	Dr. T. Hosoya Dr. S. Yoshida Dr. Y. Nishiyama
7 8 9	July 6, 2016 14:40～19:30	Fluorescent Molecules and Their Application Floor 1, Building 21	Dr. H. Tamamura Dr. T. Hirano Dr. T. Mizuguchi
10 11 12	July 7, 2016 14:40～19:30	Biological Screening in Chemical Biology Floor 1, Building 21	Dr. H. Kagechika Dr. W. Nomura Dr. M. Yuasa
13 14 15	July 8, 2016 14:40～19:30	Biological Analysis of Bioactive Molecules Floor 21 M&D Tower, Department of Immunology	Dr. T. Tsubata Dr. N. Matsubara Dr. S. Mori

Special Lectures on Molecular Structures

(Code: 3033 1st year 2 units)

1. Instructor(s)

Nobutoshi Ito (Dept of Structural Biology, Professor)
Teikichi Ikura (Dept of Structural Biology, Associate Professor)
Nobutaka Numoto (Dept of Structural Biology, Assistant Professor)
Masayuki Nara (Dept of Chemistry, Professor)
Hidekazu Hiroaki (Nagoya University, Professor)
Kengo Kinoshita (Tohoku University, Professor)
Masataka Kuroda (Mitsubishi Tanabe Pharma, Chief Scientist)

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

Recent advances in structural biology resulted in not only in understanding molecular basis of biology and medicine but also accumulation of a large amount of structural information. The purpose of the course is that those students who are not specialized in the field understand the basics of the method and are able to make use of such information.

Outline

This course deals with three-dimensional structure of biological macromolecules such as proteins and nucleic acids. The basic ideas about structural biology are shown first and their implications to the biological activity and industrial importance will then be discussed. The practical methods to determine such structures, mainly X-ray crystallography and nuclear magnetic resonance (NMR) spectroscopy are also explained.

4. Course Objective(s)

To understand the structural information of biological macromolecules and make its use in one's own field.

5. Format

Lecture/Lab

6. Course Description and Timetable

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7. Grading System

Final examination (70 %) Contribution to the lecutres (30 %)

8. Prerequisite Reading

None

9. Reference Materials

Branden & Tooze, "Introduction to Protein Structure" (Garland Publishing)

10. Important Course Requirements

none

11. Office hours

On request (by prior appointment with Prof Ito)

１２．Note(s) to students

None

Schedule

No	Day Time	Topics Venue	Instructor
1	Monday Oct 3 13:00～14:30	Introduction to Protein Structures I Lecture Room 1, M&D Tower 21F	N. Ito
2	Monday Oct 3 14:40～16:10	Introduction to Protein Structures II Lecture Room 1, M&D Tower 21F	
3	Tuesday Oct 4 13:00～14:30	Structure and function & molecular recognition I Lecture Room 1, M&D Tower 21F	
4	Tuesday Oct 4 14:40～16:10	Structure and function & molecular recognition II Lecture Room 1, M&D Tower 21F	
5	Tuesday Oct 11 13:00～14:30	Methods to determine the structure of biological macromolecules I Lecture Room 1, M&D Tower 21F	
6	Tuesday Oct 11 14:40～16:10	Protein structure & drug development Lecture Room 1, M&D Tower 21F	M. Kuroda
7	Monday Oct 24 13:00～14:30	Protein folding & stability I Lecture Room 1, M&D Tower 21F	T. Ikura
8	Monday Oct 24 14:40～16:10	Protein folding & stability II Lecture Room 1, M&D Tower 21F	
9	Monday Oct 31 13:00～14:30	NMR analysis of proteins I Lecture Room 1, M&D Tower 21F	H. Hiroaki
10	Monday Oct 31 14:40～16:10	NMR analysis of proteins II Lecture Room 1, M&D Tower 21F	
11	Monday Nov 7 13:00～14:30	Computational analysis Lecture Room 1, M&D Tower 21F	K. Kinoshita
12	Monday Nov 7 14:40～16:10	Methods to determine the structure of biological macromolecules II Lecture Room 1, M&D Tower 21F	N. Ito
13	Monday Nov 14 13:00～14:30	Crystallization & data analysis of proteins Lecture Room 1, M&D Tower 21F	N. Ito, T. Ikura & N. Numoto
14	Monday Nov 14 14:40～16:10	Crystallization & data analysis of proteins Lecture Room 1, M&D Tower 21F	
15	Monday Nov 21 13:00～14:30	IR & Raman spectroscopy Lecture Room 1, M&D Tower 21F	M. Nara

Advanced Biomaterials Science

(Code: 3034 1st year 2 units)

1. Instructor(s)

Nobuhiko Yui, Prof. of Organic Biomaterials yui.org@tmd.ac.jp
Takao Hanawa, Prof. of Metallic Biomaterials hanawa.met@tmd.ac.jp
Kimihiro Yamashita, Prof. of Inorganic Biomaterials yama-k.bcr@tmd.ac.jp
Yusuke Tsutsumi, Assoc. Prof. of Metallic Biomaterials tsutsumi.met@tmd.ac.jp
Miho Nakamura, Assoc. Prof. of Inorganic Biomaterials miho.bcr@tmd.ac.jp
Atsushi Tamura, Assist. Prof. of Organic Biomaterials tamura.org@tmd.ac.jp
Yoshinori Arisaka, Assist. Prof. of Organic Biomaterials arisaka.org@tmd.ac.jp
Naohiro Horiuchi, Assist. Prof. of Inorganic Biomaterials nhori.bcr@tmd.ac.jp

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

To understand the basis of biomaterials used for a variety of applications in contact with living body. The properties of biomaterials are requested to vary as to adopt their applications in hard and soft tissues. The final goal of this course is to master basic knowledge on biomaterials including metals, ceramics, and polymeric materials covering a wide range of medical applications.

Outline

This course deals with bio-inspired systems using metals, ceramics, and organic materials from basic material science to biotechnological and biomedical applications. Recent topics about drug delivery system and tissue engineering will be also lectured.

4. Course Objective(s)

This course provides basic information on biomaterials including metals, ceramics and polymeric materials. It is important to understand how these biomaterials have been applied for a wide range of clinical issues as to recover and/or regenerate the lost properties of original body functions.

5. Format

Lecture

6. Course Description and Timetable

Next Page

7. Grading System

Final examination, Attendance

8. Prerequisite Reading

None

9. Reference Materials

Any references will be suggested during the lectures.

10. Important Course Requirements

Each instructor will advice in advance as to promote a better understanding of students.

11. Office hours

Any questions on each lecture are always welcome.

１２. Note(s) to students

None

Schedule

No	Day Time	Topics Venue	Instructor
1	May 9, 2016 10:30～12:00	Introduction (classification & historical background) (Floor 21, M&D Tower)	Nobuhiko Yui
2	May 9, 2016 16:20～17:50	Overview of materials 1: (Floor 2, Building 22)	Takao Hanawa
3	May 11, 2016 10:30～12:00	Overview of materials 2: (Floor 2, Building 22)	
4	May 12, 2016 10:30～12:00	Polymer synthesis (Floor 2, Building 22)	Atsushi Tamura
5	May 16, 2016 10:30～12:00	Polymer structure (Floor 2, Building 22)	Nobuhiko Yui
6	May 23, 2016 14:40～16:10	Polymer processing (Floor 2, Building 22)	Yoshinori Arisaka
7	May 30, 2016 16:20～17:50	Polymer properties (Floor 2, Building 22)	Nobuhiko Yui
8	May 31, 2016 10:30～12:00	Introduction to bioceramics (Floor 2, Building 22)	Kimihiro Yamashita
9	May 31, 2016 14:40～16:10	Bioceramic processing and properties (Floor 2, Building 22)	Miho Nakamura
10	June 2, 2016 8:50～10:20	Bioceramic processing and properties (Floor 2, Building 22)	Naohiro Horiuchi
11	June 2, 2016 10:30～12:00	Bioceramics of calcium phosphate (Floor 2, Building 22)	Miho Nakamura
12	June 6, 2016 8:50～10:20	Structure of metals (Floor 2, Building 22)	Yusuke Tsutsumi
13	June 6, 2016 10:30～12:00	Surface property of metals (Floor 2, Building 22)	
14	June 9, 2016 8:50～10:20	Deformation and fracture of metals (Floor 2, Building 22)	Takao Hanawa
15	June 9, 2016 10:30～12:00	Medical application of metals (Floor 2, Building 22)	

Applied Biomaterials

(Code: 3036 1st year 2 units)

1. Instructor(s)

Akiko Nagai, Assoc. Prof. of Material Biofunctions nag-bcr@tmd.ac.jp
Takao Hanawa, Prof. of Metalic Biomaterials hanawa.met@tmd.ac.jp
Nobuhiko Yui, Prof. of Organic Biomaterials yui.org@tmd.ac.jp
Akio Kishida, Prof. of Material-based Medical Engineering kishida.mbme@tmd.ac.jp
Tsuyoshi Kimura, Assoc. Prof. Material-based Medical Engineering kimurat.mbme@tmd.ac.jp
Atsushi Tamura, Assist. Prof. of Organic Biomaterials tamura.org@tmd.ac.jp
Kosuke Nozaki, Assist. Prof. of Material Biofunctions k.nozaki.fpro@tmd.ac.jp
Yoshihide Hashimoto,, Assist. Prof. of Material-based Medical Engineering hashimoto.atrm

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

To understand pathological phenomena associated with biomaterials and pathophysiological responses of the body to the deivices. The final goal of this course is to find future challenges of the biomaterials for clinical application.

Outline

This course deals with the reaction of living body to biomaterials, physiology, biochemistry, cell biology, immunology in order to understand biomaterials in detalis. Future direction and the problems to be solved of the biomaterials research will be discussed.

4. Course Objective(s)

This course provides information on principle interactions between the body and the biomaterials.
It is important to bulid new strategies for clinical application from the existing information.

5. Format

Lecture

6. Course Description and Timetable

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7. Grading System

Final examination 80%, Attendance 20%
12 attendances out of 15 are needed to take the exam.

8. Prerequisite Reading

To be announced by each lecturers.

9. Reference Materials

To be announced by each lecturers.

10. Important Course Requirements

To have motivation to contribute the advancement of medical science.

11. Office hours

As needed

12. Note(s) to students

None

Schedule

No	Day Time	Topics Venue	Instructor
1 2	June 13, 2016 8:50～12:00	Basic Pathology 1,2 (Floor 2, Building 22)	Akiko Nagai Akio Kishida
3 4	June 15, 2016 8:50～12:00	Biological response 1: toxicity & acute inflammation Biological response 2: chronic inflammation (Floor 2, Building 22)	Nobuhiko Yui Akio Kishida
5 6	June 16, 2016 8:50～12:00	Biological response 3: drug metabolism Biological response 4: biomaterials & infections (Floor 2, Building 22)	Atsushi Tamura Kosuke Nozaki
7 8	June 17, 2016 14:40～17:50	Biological response 5: cells & biomaterials Clinical application and challenge 1: polymeric biomaterials (Floor 2, Building 22)	Nobuhiko Yui Yoshihide Hashimoto
9 10	June 20, 2016 8:50～12:00	Clinical application and challenge 2: Bioceramics Future development 1: Bioceramics (Floor 2, Building 22)	Kosuke Nozaki Akiko Nagai
11 12	June 21, 2016 14:40～17:50	Clinical application and challenge 3:regenerative medicine Clinical application and challenge 4:pharmacology (Floor 2, Building 22)	Tsuyoshi Kimura Atsushi Tamura
13	June 22, 2016 14:40～16:10	Future development 2: polymeric biomaterials (Floor 2, Building 22)	Nobuhiko Yui
14 15	June 23, 2016 8:50～12:00	Clinical application and challenge 5: Metals Future development 3: Metals (Floor 2, Building 22)	Takao Hanawa

Biomedical Device Science and Engineering

(Code: 3035 1st year 1 units)

1. Instructor(s)

Chief: Prof. Kohji Mitsubayashi (Prof: Dept. Biomed. Devices and Instrument.) m.bdi@tmd.ac.jp
Prof. Yuji Miyahara (Prof. Dept. Bioelectronics) miyahara.bsr@tmd.ac.jp
Dr. Akira Matasumoto (Assoc. Prof. Dept. Bioelectronics) matsumoto.bsr@tmd.ac.jp
Dr. Takahiro Arakawa (Jr.Assoc.Prof.: Dept. Biomed. Devices & Instrument.) arakawa.bdi@tmd.ac.jp
Dr. Tatsuro Goda (Assist. Prof. Dept. Bioelectronics) goda.bsr@tmd.ac.jp
Dr. Koji Toma (Assist. Prof. :Dept. Biomed. Devices and Instrument.) toma.bdi@tmd.ac.jp

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

The purpose of this course is to acquire the knowledge's of latest biomedical device (element) technologies based on biochemistry, biotechnology, mechanics, electronics, MEMS, biomaterials, IT technology, etc. For understanding these technologies, related fundamental scientific and technological issues underlying those device technologies are also introduced and discussed.

Outline

The outline of this course is to study novel biomedical devices such as biosensors, bioelectronics and bio-photonic devices. The course consists of some lectures of biosensing device, biosniffer, bioactuator, micro system, photonics, biotransistor and biomedical functional material & device.

4. Course Objective(s)

The Objective of this course is to ensure the acquisition of fundamentals and basic of latest biomedical devices and their technologies. The acquirer of this course is allowed to understand the fundamental scientific of those devices in some research & technical papers and to discuss some technological issues underlying those devices.

5. Format

Lecture

6. Course Description and Timetable

Next Page

7. Grading System

Attendance (60%) and Examination (40%)

8. Prerequisite Reading

To be announced at the guidance and regular lectures.

9. Reference Materials

To be distributed during the lecture.

10. Important Course Requirements

To be announced during the lecture.

11. Office hours

Every Monday morning (11:00AM to noon) at room No. 503B on 5 fl. at Building 21

１２．Note(s) to students

Nothing.

Schedule

No	Day Time	Topics Venue	Instructor
1	June 17, 2016 13:00～14:30	Guidance and Biomedeical sensors (Conf. Room No.2, Floor 1, Building	Prof. Mitsubayashi
2	June 20, 2016 13:00～14:30	Biosensors and Advanced medical (Conf. Room No.2, Floor 1, Building	Prof. Mitsubayashi
3	June 21, 2016 13:00～14:30	u-TAS and Advanced biosensing (Conf. Room No.2, Floor 1, Building	Dr. Arakawa
4	June 22, 2016 13:00～14:30	Biophotonics and Advanced photo (Conf. Room No.2, Floor 1, Building	Dr. Toma
5	June 23, 2016 13:00～14:30	MEMS-based DNA analysis (Conf. Room No.2, Floor 1, Building	Prof. Miyahara
6	June 23, 2016 14:40～16:10	Principle of bio-transistor (Conf. Room No.2, Floor 1, Building	Prof. Miyahara
7	June 24, 2016 13:00～14:30	Functional Interface and molecular (Conf. Room No.2, Floor 1, Building	Dr. Goda
8	June 24, 2016 14:40～16:10	Function and application of soft (Conf. Room No.2, Floor 1, Building	Dr. Matsumoto

Biomedical System Science and Engineering

(Code: 3044 1st year 1 units)

1. Instructor(s)

Prof. Kenji Kawashima E-mail kkawa.bmc@tmd.ac.jp
Prof. Kazuo Takakuda E-mail takakuda.mech@tmd.ac.jp
Assistant Prof. Takahiro Kanno E-mail kanno.bmc@tmd.ac.jp

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

The purpose of this course is to acquire the knowledge of latest biomedical system technologies, which is complementary to biomedical device (element) technologies. For understanding these technologies, related fundamental scientific and technological issues underlying those system technologies are also introduced and discussed.

Outline

Learn basic of bio-technology, electrical and electronic science, measurement and control technology and mechanics. This lecture also provides recent topics of medical and diagnosis systems and risk analysis of the systems.

4. Course Objective(s)

Learn basic of technologies for the development of biomedical systems.

5. Format

Lecture

6. Course Description and Timetable

Next Page

7. Grading System

Attendance (60%) and Examination (40%)

8. Prerequisite Reading

Instruct at the first lecture if necessary

9. Reference Materials

To be announced during the lecture.

10. Important Course Requirements

11. Office hours

Monday 11:00 to 12:00, Prof Kenji Kawashima (Floor 1, Builiding 21)

12. Note(s) to students

none

Schedule

No	Day Time	Topics Venue	Instructor
1	June 3, 2017 14:40～16:10	Mechanical Engineering for Biomedical Systems (Floor 1, Building 22)	Prof. Takakuda
2	June 7, 2017 14:40～16:10	Medical Devices For Locomotory and masticatory system (Floor 1, Building 22)	
3	June 7, 2017 16:20～17:50	Risk and Benefit analysis for Medical Devices (Floor 1, Building 22)	
4	June 9, 2017 14:40～16:10	Control Engineering for Biomedical Systems (Floor 1, Building 22)	Prof. Kawashima
5	June 10, 2017 14:40～16:10	Now and Future of Surgical Robot (Floor 1, Building 22)	
6	June 14, 2017 14:40～16:10	Power Assist Systems (Floor 1, Building 22)	
7	June 14, 2017 16:20～17:50	Electrical Engineering for Biomedical Systems (Floor 1, Building 22)	Assist. Prof. Kanno
8	June 16, 2017 14:40～16:10	User Interfaces for Biomedical Systems (Floor 1, Building 22)	

Medical, Dental and Pharmaceutical Industrial Engineering

(Code: 3037 1st year 1units)

1. Instructor(s)

Akio Kishida, Prof. of Material-based Medical Engineering kishida.mbme@tmd.ac.jp
Naoko Harada, Assist. Prof. of Maxillofacial Orthognathics naoko.ope@tmd.ac.jp
Masaki Kawanishi, Examination officer of Pharmaceuticals and Medical Devices Agency
Ayano Kobayashi, Examination officer of Pharmaceuticals and Medical Devices Agency
Yoko Kobayashi, Principal officer of Pharmaceuticals and Medical Devices Agency

2. Classroom/Lab

Next Page

3. Course Purpose and Outline

Course Purpose

To learn fundamental knowledge, which is necessary to build up robust research strategies that take into account practical use in the medical research field.

Outline

This course invites peoples who are in charge of the approval and who is working on research field in company and gives various criteria to approve the product in the approval and development of view.

4. Course Objective(s)

To launch pharmaceuticals and medical devices, it is necessary to pass various criterions to obtain the approval and license for the product, manufacturing as well as research and development. The objective of this course is to understand theses processes to approve pharmaceuticals and medical devices through the lecture given by experts and company researchers who are engaged in.

5. Format

Lecture

6. Course Description and Timetable

Next Page

7. Grading System

Class participation (60%), Final examination (40%)

8. Prerequisite Reading

None

9. Reference Materials

Each instructor will advice in advance as to promote a better understanding of students.

１０. Important Course Requirements

Evening class

１１. Office hours

Any questions on each lecture are always welcome.

１２. Note(s) to students

None

Schedule

No	Day Time	Topics Venue	Instructor
1	October 11, 2016 18:00~19:30	Introduction (Conference romm 1, Floor 3, Building 22)	Akio Kishida
2	October 18, 2016 18:00~19:30	Launch processes for Pharmaceuticals and Medical Devices (Conference romm 1, Floor 3, Building 22)	Naoko Harada
3	October 25, 2016 18:00~19:30	Development of Medical Devices (Conference romm 1, Floor 3, Building 22)	Visiting Professor
4	November 1, 2016 18:00~19:30	Development in company 1 (Conference romm 1, Floor 3, Building 22)	Invited lecturer
5	November 8, 2016 18:00~19:30	Development in company 2 (Conference romm 1, Floor 3, Building 22)	Invited lecturer
6	November 15, 2016 18:00~19:30	Approval of Pharmaceuticals (Conference romm 1, Floor 3, Building 22)	Ayano Kobayashi
7	November 21, 2016 18:00~19:30	Approval of Medical Devices (Conference romm 1, Floor 3, Building 22)	Yoko Kobayashi
8	November 29, 2016 18:00~19:30	Approval of Regenerative Medicines (Conference romm 1, Floor 3, Building 22)	Masaki Kawanishi

The date can be changed depending on the lecturer's schedule.
The change will be informed as needed.

Medical and Research Ethics

(Code: 3039 1st year 1 units)

1. Instructor(s)

Masayuki YOSHIDA, Yusuke EBANA, Masayoshi TSUTSUMI, Hiroko KOHBATA, Eiichiro KANDA

2. Classroom/Lab

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3. Course Purpose and Outline

Course Purpose

We aim to learn many ethical issues relevant to research and clinical practice, and also provide significant training to make proper decision on confronting problems scientifically and ethically.

Outline

Researchers and doctors need to know the development of medicine/biology and the history of social conflicts, and to learn solid knowledge about bioethics in the international level to dedicate the biological progress to society. Especially, as for the usage of genetic information and ES cells, we learn to make the proper decisions based on the bioethics, using Research Review practice.

4. Course Objective(s)

To learn the required ethics on the biological research and clinical practice

5. Format

lecture

6. Course Description and Timetable

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7. Grading System

We grade on the attitude and the contents of report according to attendance to class

8. Prerequisite Reading

Take basic knowledge in advance through the books and internets

9. Reference Materials

Nothing particular

10. Important Course Requirements

Nothing particular

11. Office hours

Prof. Masayuki YOSHIDA, Weekday 10 am to 4 pm

12. Note(s) to students

None

Schedule

No	Day Time	Topics Venue	Instructor
1	Friday Apr 8 8:50～10:20	Research and medical ethics 1 Lecture Room 1, M&D Tower 21F	Masayuki YOSHIDA
2	Monday Apr 18 8:50～10:20	Research and medical ethics 2 Lecture Room 1, M&D Tower 21F	
3	Tuesday Apr 19 8:50～10:20	How to conduct clinical study Lecture Room 1, M&D Tower 21F	Eiichiro KANDA
4	Wednesday Apr 20 8:50～10:20	Ethical review of research and human subject specimens Lecture Room 1, M&D Tower 21F	Masayuki YOSHIDA
5	Thursday Apr 21 8:50～10:20	Genetic Testing and its ethical issues Lecture Room 1, M&D Tower 21F	Masayoshi TSUTSUMI
6	Friday Apr 22 8:50～10:20	The progress of treatment for congenital diseases Lecture Room 1, M&D Tower 21F	Masayuki YOSHIDA
7	Friday May 6 8:50～10:20	Practice for ethical reviews Lecture Room 1, M&D Tower 21F	Yusuke EBANA
8	Friday May 6 10:30～12:00	Genetic Councelling Lecture Room 1, M&D Tower 21F	Hiroko KOHBATA

Translational Research

Code: 3040 1st year 2 units

1. Instructors

	Name	Field / Job title	Contact
Chief Instructor	Hiroyuki Kagechika	Organic and Medicinal Chemistry / Professor	kage.chem@tmd.ac.jp
	Yoshihiro Takemoto	Life Science and Technology Track Disease Prevention Science Course Program / Professor	takemoto.mech@tmd.ac.jp
Instructors	Hiroyuki Kagechika	Organic and Medicinal Chemistry / Professor	
	Yoshihiro Takemoto	Life Science and Technology Track Disease Prevention Science Course Program / Professor	
	Yoshiro Iwasawa	US Tanabe Research Lab / Former Vice President	
	Satoru Iwasaki	GlaxoSmithKline / Former Executive Director	
	Akihiro Ishiguro	Pharmaceuticals and Medical Devices Agency / Manager	
	Kazunori Hashimoto	Centcrest IP Attorneys / Vice President	
	Kazuo Sato	Daiichi Sankyo Company, limited / Director	
	Masashi Kuroishi	Watervein Partners / Executive Partner	

2. Classroom / Lab

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3. Course Purpose and Outline

Course Purpose

This course will follow a learning course covering basic research to clinical research and the marketplace (i.e. application and contribution to society), offering a comprehensive review of such topics as the issues in basic research, intermediary research (start-ups), and international clinical research, the marketplace perspective, how to think about intellectual property and regulations (regulatory science), methods for project management when running research development projects, etc., with the objective of obtaining an overall view of life science in its practical application.

Overview

In this course, first you will learn about the overall world trend in the pharmaceutical industry in terms of drug creation and development. After this, you will learn about the methods behind start ups and the entrepreneurs behind them, which play an important intermediary role between basic and applied research (in this case, clinical research).
There will also be practice-based lectures on case studies where findings from university-based basic research were taken up in clinical research via start up companies. As background knowledge, you will learn about intellectual property and regulations. You will also study, through practice, about the management skills needed for running the different types of projects. Through this series of lectures, you will obtain an overall understanding of the issues and current status of translational research, which links research and society.

4. Course Objective(s)

Life science, which takes people as its subject, can be divided into three stages: basic research, clinical research, and intermediary research which connects the two. The objective of this course is the acquisition of an understanding and bird's-eye perspective of the issues at each stage.

5. Format

At the beginning of each lecture, we will discuss a current topic in bio-science. After the lecture portion, there will be time allotted for discussion among students and question and answer time with the lecturer, allowing for an interactive lecture course.

6. Course Description and Timetable

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7. Grading System

Grades shall be based on, participation during the lecture (40%), questions during the lecture (30%), and an exam (30%).

8. Prerequisite Reading

none

9. Reference Materials

none

10. Important Course Requirements

This course is practice-based and each lecture is interrelated so attendance is essential.

11. Office Hours

As needed, please make an appt. thru E-mail. Professor Yoshihiro Takemoto's, takemoto.mech@tmd.ac.jp

12. Note (s) to Students

none

Schedule

No	Day Time	Topics Venue	Instructors
1	10 May Tue. 14:40～16:10	Guidance. Discovery Research 1 (Building No. 3, 6f Big Lecture Hall)	Hiroyuki Kagechika Yoshihiro Takemoto Yoshiro Iwasawa
2	10 May Tue. 16:20～17:50	Discovery Research 1 (Building No. 3, 6f Big Lecture Hall)	
3	11 May Wed. 14:40～16:10	Global Clinical Development and Trends 1 (Building No. 3, 6f Big Lecture Hall)	Yoshihiro Takemoto Masaru Iwasaki
4	11 May Wed. 16:20～17:50	Global Clinical Development and Trends 2 (Building No. 3, 6f Big Lecture Hall)	
5	18 May Wed. 14:40～16:10	Venture and Entrepreneurship 1 (Building No. 3, 6f Big Lecture Hall)	Yoshihiro Takemoto
6	18 May Wed. 16:20～17:50	Venture and Entrepreneurship 2 (Building No. 3, 6f Big Lecture Hall)	
7	25 May Wed. 14:40～16:10	Personalized Medicine and Regulatory Science 1 (Building No. 3, 6f Big Lecture Hall)	Yoshihiro Takemoto Akihiro Ishiguro
8	25 May Wed. 16:20～17:50	Personalized Medicine and Regulatory Science 2 (Building No. 3, 6f Big Lecture Hall)	
9	1 June Wed. 14:40～16:10	Intellectual Property from University Perspective (Building No. 3, 6f Big Lecture Hall)	Yoshihiro Takemoto Kazunori Hashimoto
10	6月1日 Wed. 16:20～17:50	Intellectual Property from Industry Perspective (Building No. 3, 6f Big Lecture Hall)	Yoshihiro Takemoto Kazuo Sato
11	8 June Wed. 14:40～16:10	Venture Investment and Human Resource Management 1 (Building No. 3, 6f Big Lecture Hall)	Yoshihiro Takemoto Masashi Kuroishi
12	8 June Wed. 16:20～17:50	Venture Investment and Human Resource Management 2 (Building No. 3, 6f Big Lecture Hall)	
13	15 June Wed. 14:40～16:10	Project Management 1 (Building No. 3, 6f Big Lecture Hall)	Yoshihiro Takemoto
14	15 June Wed. 16:20～17:50	Project Management 2 (Building No. 3, 6f Big Lecture Hall)	
15	15 June Wed. 18:00～19:30	Presentation (Building No. 3, 6f Big Lecture Hall)	

Practice in Global Linkage between University and Industry

(Code: 3042 1st year 2 units)

１．Instructor(s)

[Chief Instructor] Prof. Hirokazu Tamamura; Dept. Med. Chem.; E-mail: tamamura.mr@tmd.ac.jp
Prof. Koji Mitsubayashi; Prof. Hiroyuki Kagechika; Prof. Yoshihiro Takemoto

２．Classroom/Lab

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３．Course Purpose and Outline

Course Purpose

The purpose of this course is to learn practical skills, which will be useful in the industrial world, to master applicable ability based on research capability and language ability acquired in master courses.

Outline

This course is an experience-based course of case studies that dispatch students to domestic companies
as internship and special training programs.

４．Course Objective(s)

This course objective is to aquire ablility to obtain the trend in real time of the society
in practical situations through internship and special training programs.

５．Format

Pre-training programs are perfomed in Ochanomizu University or TMDU.
Briefing about companies is performed using power point prezentaions in lecture styles.

６．Course Description and Timetable

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７．Grading System

Initially, it is necessary to attend a pre-training program.
Evaluation: atendance (40 points) and a report on an internship or special training program (60 points)

８．Prerequisite Reading

Preliminarily, the trend in real time of the society must be investigated.

９．Reference Materials

Nothing in particular

１０．Important Course Requirements

Nothing in particular

１１．Office hours

At any time on Monday - Friday
[Chief Instructor] Prof. Hirokazu Tamamura; Dept. Med. Chem.;
Rm 603B, Floor 6, Bldg 21

１２． Note(s) to students

Participants must attend a pre-training program perfomed in Ochanomizu University or TMDU.
At any time the educational office advertises recruitments of internship or special training programs.
Applicants must attend briefing about companies and apply them.
Applicants need approval from their supervisors and must present implementation planning sheets, motivations, objectives and recommendation letters.
By evaluation of these documents, approval is given.
After an internship or special training program, its report must be presented.
Participants must enroll an insurance except for unnecessary cases.

Schedule

No	Day Time	Topics Venue	Instructor
1	about May or June (mail announce one month before)	pre-training program (manner training) Ochanomizu University or TMDU	Tamamura, Hirokazu Mitsubayashi, Koji Kagechika,
2 3	about May or June (mail announce a few weeks before)	briefing about companies TMDU, etc.	Tamamura, Hirokazu Mitsubayashi, Koji Kagechika,
4 5	about May or June (mail announce a few weeks before)	briefing about companies TMDU, etc.	Tamamura, Hirokazu Mitsubayashi, Koji Kagechika,
6 ~ 15	about June - September	internship or special training program	not yet decided

General Information for Students

1 Contact and Notices

All student announcements and notices (concerning scholarship matters, health examinations, tuition payments, etc.) will be posted or told by guidance counselor, and students should make sure they do not miss any new postings. (Notices are posted on the bulletin board in front of the nursery, on the first floor of Building 6).

Because this bulletin board is updated constantly, students should check the postings at least once a day to avoid missing important notices.

Announcements concerning the dates, times and locations of lectures are made by e-mail when necessary. Students must check their e-mail regularly to avoid missing this information as well.

2 Tuition Fee

Students should pay tuition fee by the end of October and April. Or students become a withdrawal in any reason.

3 Student Identification Cards

Students entering the university are issued student ID cards as a way to identify themselves as university students. These cards should be worn as nametags while on campus. Because these ID cards are designed to be used for the two-year master course, they should be treated with care so they are not damaged or lost.

Students need to carry these cards with them at all times to facilitate purchases of such items as student commuter passes and on other occasions.

(1) Reissue

Students should promptly notify Educational Planning Section if they have lost or damaged their ID card, and complete the procedures to have another card issued to them.

(2) Return the card

Students should promptly return their ID card to Educational Planning Section upon graduation, withdrawal or expulsion, or when the card expires.

4 Certificates and Other Documents

Numerous types of certificates and other official documents are issued by Educational Planning Section, while others may be obtained from automatic document issuing machines.

(1) Educational Planning Section (hours: 8:30 a.m. ~ 5:15 p.m.)

The following documents are issued by Educational Planning Section. Students will need to fill out the appropriate application forms to receive the needed items. (As a general rule, Japanese certificate takes several days to issue after application. English version requires about one week.

① Academic transcripts

② Prospective course completion certificates (for students enrolled in the second year program of the master course, and for students who applied for a degree thesis in the

doctoral course)

③ English-language certificate of attendance (issue requires about one week)

④ Practical training commuter passes

Commuter passes for traveling to hospitals and other locations off campus for practical training and other purposes may be issued. Students needing such passes should apply for them at Educational Planning Section.

Please be aware that it takes about one month to obtain permission from the railway companies (for example, application procedures should be completed by the end of February to begin use from April).

Note: Students should consult with Educational Planning Section concerning certificates or other documents not listed above.

(2) Automatic document issuing machine (hours: 8:30 a.m. ~ 9:00 p.m.)

Certificates of registration and student discount certificates are available from the "automatic document issuing machine" in the Student Lounge (4F, Building 5). Inquiries: Student Support Section (ext.5077), Educational Planning Section (ext. 5074).

5 Student Passenger Discount Certificates (Student Discount Certificates)

(1) Students using Japan Railways (JR) for extracurricular activities — such as returning to their family homes or for other purposes — are eligible for discounts (20 percent) on passenger fares when the routes traveled exceed 100 kilometers one-way.

Because this system is meant to reduce the financial burden on students while attending school and thereby contribute to the advancement of their education, discounts should be used in a responsible and systematic fashion. (Up to 10 tickets per student within one year; valid for two months from date of issue.)

(2) Abuse or dishonest use of this privilege is strictly forbidden. Students engaging in the types of activities listed below will not only be penalized equivalent to double the cost of the normal fare, there is also the risk that student discounts will be suspended for all students attending the university.

① When a train ticket purchased with a student discount certificate is in another person's name.

② When an individual other than the purchaser uses a discounted train ticket.

③ Using a discounted ticket after the deadline has expired.

(3) Student discount certificates are available at the "Automatic document issuing machine" in the Student Lounge (4F, Building 5; hours: 8:30 a.m. ~ 9:00 p.m.).

Inquiries: Student Support Section (ext.5077), Educational Planning Section (ext. 5074).

6 Changes in Address, Name, etc.

Notice of changes in the address, permanent domicile, name, etc. (including telephone numbers) of the student or the student's guarantor should be promptly reported to Educational Planning Section and the proper procedures completed.

Neglecting to complete these procedures may make it impossible for the university to contact the student or the student's guarantor in times of emergency or other cases.

7 Leave of Absence, Readmission, Withdrawal, Research Training Consignment, Study Abroad, Extending Attendance Period

All requests for a leave of absence, readmission, withdrawal, research training consignment and other status changes require approval from the university president, following referral from a faculty meeting of Graduate School of Medical and Dental Sciences. Due to the time required to process such requests, students should consult with Educational Planning Section in advance.

Furthermore, students wishing to obtain research training at another graduate school or other institution must obtain approval from a faculty meeting of Graduate School of Medical and Dental Sciences, and then secure agreement for the plan from the other graduate school, etc. Due to the time required to process such requests, students must submit the application materials to Educational Planning Section no later than two months prior to the date on which the desired consignment is scheduled to begin.

(1) **Absences** (submit no later than Two months prior to the desired date of absence)

Students requesting, for illness or other reasons, a leave from the university for a continuous period of three months or more, or subsequent extensions of such leave, must submit either a “Request for Leave” or a “Request for Extension of Leave” form to Educational Planning Section, and obtain proper permission from the president. (In cases of illness, a physician’s medical certificate must be attached to the request.)

Students considering taking a leave (or extending the period of leave) should consult closely with their academic advisor in advance.

The periods granted for leave cannot exceed a combined total of two years.

(2) **Readmission** (submit no later than Two months prior to the desired date of readmission)

Students on leave who wish to gain readmission to the university either during or at the completion of the period of the said leave must submit a “Request for Readmission” form (cosigned by their guarantor) to Educational Planning Section, and obtain proper permission from the president. (If the leave is due to illness, a physician’s medical certificate must be attached to the request).

(3) **Withdrawal** (submit no later than Two months prior to the desired date of withdrawal)

Students wishing to withdraw from the university due to illness or other circumstances that renders it difficult for them to continue their studies must submit a “Request for Withdrawal” form (cosigned by their guarantor) to Educational Planning Section, and obtain proper permission from the president.

Students considering such withdrawal should consult closely with their academic advisor in advance.

(4) **Research Training Consignment** (submit no later than two months prior to the desired date of research training consignment)

Students wishing to undergo research training at another graduate school, research institute or high-level hospital (hereafter referred to as “other institutions”) must submit a “Request for Research Training Consignment” form after consulting with the other party in advance. If Graduate School of Medical and Dental Sciences determines that

such training is beneficial from an educational perspective, it will be possible for students making such requests to undergo research training at the institution in question.

(5) **Study Abroad** (submit no later than two months prior to the desired date of study abroad)

Students wishing to study at an overseas graduate school or institution of higher education equivalent to such graduate schools must submit a “Request for Study Abroad” form after consulting with the other party in advance. If Graduate School of Medical and Dental Sciences determines that such study is beneficial from an educational perspective, it will be possible for students making such requests to study abroad.

(6) **Extending Attendance Period**

Students wishing to maintain attendance at the university beyond the standard number of years required to complete the course (excluding leaves) must submit a “Request for Attendance Period Extension” form by the stipulated date, and receive proper permission for the said extension.

The attendance period may be extended to a maximum of twice the standard number of years required to complete the course (excluding leaves).

8 Training and Research Requests

Students wishing to engage in training (practical training) or research (collection of data through surveys of patients or other means) at outside hospitals or institutions must submit a written request for the said training or research to Educational Planning Section.

9 Lost and Found

Notices of items lost and found on campus should be conducted at the following locations:

(1) Lecture rooms: Educational Planning Section, Administrative Division, Institute of Education (1F, Building 1 West, ext. 4534)

(2) Other than “(1)” above: Administrative divisions in charge of locations (buildings) where the specific items were lost or found.

10 Career Survey

Students completing the Graduate School course (including those projected to complete all course work) must fill out and submit career surveys to Student Support Section of Administration Division, Student Support and Health Administration Organization.

Inquiries: Student Support Section (ext. 5077).

11 Others

(1) Mail addressed to specific individuals should also include the name of the affiliated research group.

(2) Traffic regulations are in effect on campus, and students are not permitted to commute to the university by car. On-campus driving permits may be issued, however, for students for whom commuting by train, bus or other means is difficult, with students in such situations encouraged to consult about applying for these permits.

(3) Administrative contacts

① Academic affairs: Educational Planning Section, Administrative Division, Institute of Education (1F, Building 1 West, ext. 4534)

② Tuition payments: Financial Planning Section, Financial and Facilities Division (3F, Building 1 West, ext. 5042)

③ Automatic document issuing machine for certificates, Scholarships, tuition waivers: Student Support Section (3F, Building 5, ext. 5077)

④ Automatic document issuing machine for certificates, other documents: Educational Planning Section (1F, Building 1 West, ext. 5074)

Procedures for Submitting Forms

Educational Planning Section (1F, Building 1 West)

Notification or Application Form	Summary	Submission Deadline
Request for Leave Request for Extension of Leave	For leave of 3 months or more *In case of illness, a physician's medical certificate must be attached	Submit no later than 2 months before desired date of leave
Request for Readmission		Submit no later than 2 months before desired date of readmission
Request for Withdrawal		Submit no later than 2 months before desired date of withdrawal
Request for Study Abroad	*To study at an overseas university or research institute, attach a request with a written explanation from an academic advisor and an acceptance letter from the overseas location	Submit no later than 2 months before desired date of study abroad
Request for Research Training Consignment	To receive research training from another graduate school or research institute	Submit no later than 2 months before desired date of training consignment
Request for Training or Research	To receive training or engage in research at another hospital, etc.	Submit no later than 2 weeks before desired date of training or research (2 months in advance for overseas study)
Request for Extending Attendance Period		Submit by late January
Notification of Name Change	*Attach documents attesting to change in family or given name	As required (submit promptly)
Notification of Change in Address		As required (submit promptly)
Notification of Change in Guarantor		As required (submit promptly)
Notification of Change in Address of Guarantor		As required (submit promptly)
Request for Reissue of Student ID	When student ID is lost or damaged	As required (submit promptly)

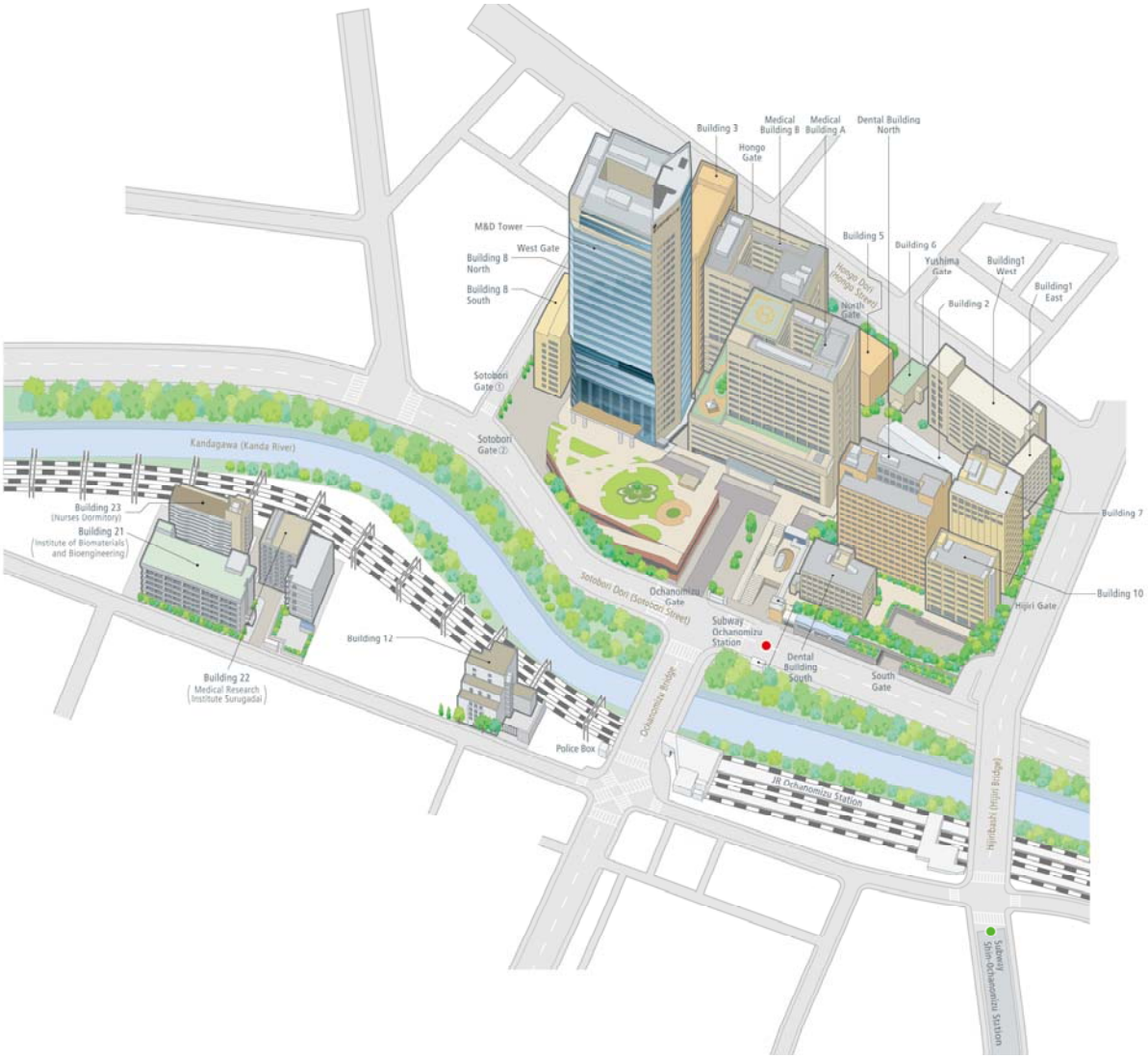
Issue of Certificates and Other Documents

Type	Application/Issue Location
Certificate of Attendance	Use the automatic document issuing machine (4F Student Lounge, Building 5) *Submit to Educational Planning Section if the document is in English.
Academic Transcript	Apply at the Educational Planning Section. Japanese certificate takes one week to issue after application. (English version requires about one week.)
Certificate of Credits Earned	
Certificate of Course Completion	
Certificate of Prospective Course Completion	
Certificate of Attendance Period	
Other Certificates	
Student Passenger Discount Certificate	Use the automatic issue machine (4F Student Lounge, Building 5)

Major On-Campus Facilities

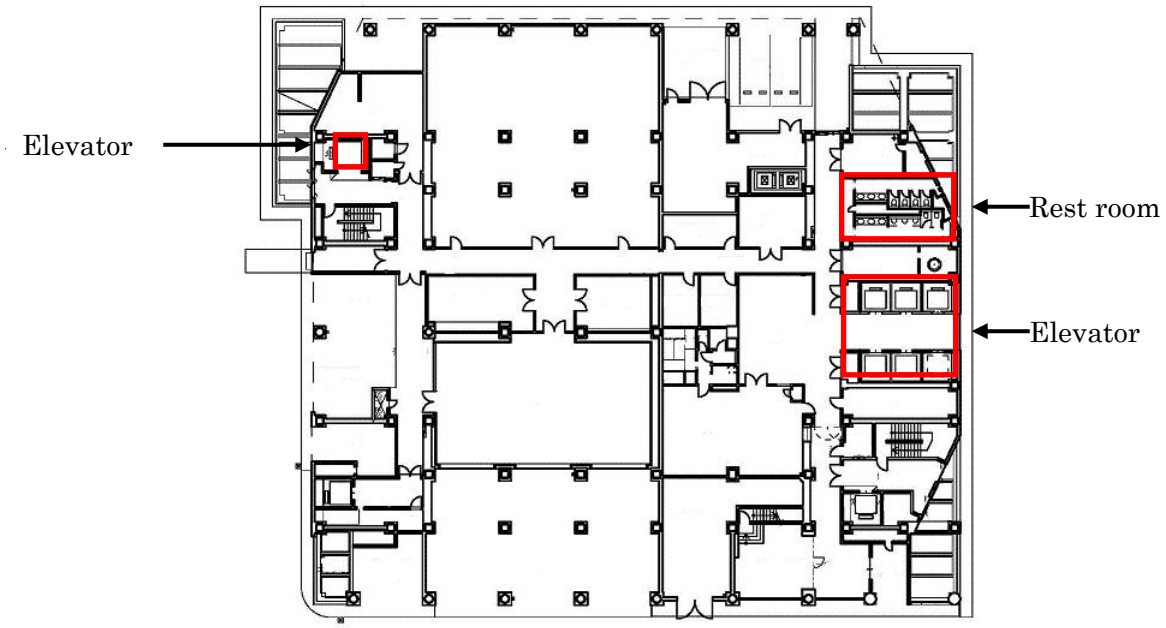
Lecture Room 3	11F, M&D Tower	
Seminar Room 3	23F, M&D Tower	
Training Room	19F, M&D Tower	
Conference Room 3	16F, M&D Tower	
Library	3/4F, M&D Tower	03-5803-5592
Health Service Center	2F, Building 5	
General Isotope Center	Building 8 North	03-5803-5788
Animal Research Center	7F, Building 7/B2F, Building 3/ B2F, M&D Tower	
Consumer's Cooperative, Cafeteria, Shop	1/B1F, Building 5	
Educational Planning Section	1F, Building 1 West	03-5803-4534
Student Support Section	3F, Building 5	03-5803-5077
Accounts Section, Finance Division	3F, Building 1 West	03-5803-5042

Campus Map


Building 3
Medical Building B
Medical Building A
Dental Building North
Hongo Gate
M&D Tower
West Gate
Building 8 North
Building 8 South
Building 5
Building 6
Yushima Gate
Building1 West
Building1 East
Hongo Dori (Hongo Street)
North Gate
Building 2
Sotobori Gate①
Sotobori Gate②
Kandagawa (Kanda River)
Building 23 (Nurses Dormitory)
Building 21 (Institute of Biomaterials and Bioengineering)
Building 7
Sotobori Dori (Sotobori Street)
Ochanomizu Gate
Hijiri Gate
Building 10
Subway Ochanomizu Station
Building 12
Dental Building South
South Gate
Building 22 (Medical Research Institute Suwadai)
Police Box
Ochanomizu Bridge
JR Ochanomizu Station
Hiribashi (Hijiri Bridge)
Subway Shin-Ochanomizu Station

M&D Tower Floor Map

○The first floor plan



○The 11th / 21st floor plan