Doctoral Program

Graduate School of Medical and Dental Sciences

Syllabus

2013

Tokyo Medical and Dental University

Doctoral Program : Medical and Dental Sciences

Common subject 共通科目

Subject		Code
初期研究研修	Initial Research Training	3002
医歯学総合特論（大学院セミナー）	Special Lecture of Global Medical and Dental Study	8601
医歯学先端研究特論（大学院特別講義）	Special Lecture of Advanced Medical and Dental Study	8602
医歯学総合研究科コース特論	Basic-Clinical Borderless Education	8603
包括臨床演習	Comprehensive dental clinical practice	8604
先端口腔科学特論	Frontier Oral and Maxillofacial Health Sciences	8605

Department	No.	Subject		Code		
				Lecture	Practice	Lab
口腔機能再構築学 Oral Health Sciences	1	口腔病理学	Oral Pathology	8011	8012	8013
	2	細菌感染制御学	Bacterial Pathogenesis	8021	8022	8023
	3	分子免疫学	Molecular Immunology	8031	8032	8033
	4	先端材料評価学	Advanced Biomaterials	8041	8042	8043
	5	口腔病態診断科学	Diagnostic Oral Pathology	8051	8052	8053
	6	有機材料学	Organic Biomaterials	8061	8062	8063
	7	機能材料学	Functional Material	8071	8072	8073
	8	口腔放射線腫瘍学	Oral Radiation Oncology	8081	8082	8083
	9	顎口腔外科学	Oral and Maxillofacial Surgery	8091	8092	8093
	10	口腔放射線医学	Oral and Maxillofacial Radiology	8101	8102	8103
	11	麻酔・生体管理学	Anesthesiology and Clinical Physiology	8111	8112	8113
	12	疼痛制御学	Orofacial Pain Management	8121	8122	8123
	13	小児歯科学	Pediatric Dentistry	8131	8132	8133
	14	咬合機能矯正学	Orthodontic Science	8141	8142	8143
	15	う蝕制御学	Cariology and Operative Dentistry	8151	8152	8153
	16	摂食機能保存学	Fixed Prosthodontics	8161	8162	8163
	17	歯髄生物学	Pulp Biology and Endodontics	8171	8172	8173
	18	部分床義歯補綴学	Removable Partial Denture Prosthodontics	8181	8182	8183
	19	インプラント・口腔再生医学	Oral Implantology and Regenerative Dental Medicine	8191	8192	8193
顎顔面頸部機能再建学 Maxillofacial and Neck Reconstruction	21	形成・再建外科	Plastic and Reconstructive Surgery	7011	7012	7013
	22	頭頸部外科学	Head and Neck Surgery	7021	7022	7023
	23	腫瘍放射線医学	Diagnostic Radiology and Oncology	7031	7032	7033
	24	顎顔面解剖学	Maxillofacial Anatomy	8211	8212	8213
	25	認知神経生物学	Cognitive Neurobiology	8221	8222	8223
	26	分子発生学	Molecular Craniofacial Embyology	8231	8232	8233
	27	分子細胞機能学	Cellular Physiological Chemistry	8241	8242	8243
	28	金属材料学	Metals	8251	8252	8253
	29	バイオデザイン	Biodesign	8261	8262	8263
	30	顎顔面外科学	Maxillofacial Surgery	8271	8272	8273
	31	顎顔面矯正学	Maxillofacial Orthognathics	8281	8282	8283
	32	顎顔面補綴学	Maxillofacial Prosthetics	8291	8292	8293
生体支持組織学 Bio-Matrix	33	細胞生物学	Cell Biology	7041	7042	7043
	34	病態代謝解析学	Medical Biochemistry	7051	7052	7053
	35	運動器外科学	Joint Surgery and Sports Medicine	7061	7062	7063
	36	硬組織構造生物学	Biostructural Science	8301	8302	8303
	37	硬組織薬理学	Pharmacology	8311	8312	8313
	38	結合組織再生学	Connective Tissue Regeneration	8321	8322	8323
	39	硬組織病態生化学	Biochemistry	8331	8332	8333
	40	分子情報伝達学	Cell Signaling	8341	8342	8343
	41	無機材料学	Inorganic Materials	8351	8352	8353
	42	歯周病学	Periodontology	8361	8362	8363

Department	No.	Subject		Code		
				Lecture	Practice	Lab
環境社会医歯学 Public Health	43	健康推進医学	Health Promotion	7071	7072	7073
	44	国際環境寄生虫病学	Environmental Parasitology	7081	7082	7083
	45	法医学	Forensic Medicine	7091	7092	7093
	46	国際保健医療協力学	International Health and Medicine	7101	7102	7103
	47	政策科学	Health Care Management and Planning	7111	7112	7113
	48	分子疫学	Molecular Epidemiology	7121	7122	7123
	49	研究開発学	Research Development	7131	7132	7133
	50	医療政策情報学	Health Policy and Informatics	7141	7142	7143
	51	先進倫理医科学	Life Sciences and Bioethics	7151	7152	7153
	52	法歯学	Forensic Dentistry	8371	8372	8373
	53	医療経済学	Health Care Economics	8381	8382	8383
	54	歯学教育開発学	Dental Education Development	8391	8392	8393
	55	健康推進歯学	Oral Health Promotion	8401	8402	8403
	56	スポーツ医歯学	Sports Medicine and Dentistry	8411	8412	8413
	57	歯学教育システム評価学	Educational System in Dentistry	8421	8422	8423
	58	教育メディア開発学	Educational Media Development	8431	8432	8433
老化制御学 Gerontology and Gerodontology	59	血流制御内科学	Geriatrics and Vascular Medicine	7161	7162	7163
	60	リハビリテーション医学	Rehabilitation Medicine	7171	7172	7173
	61	高齢者歯科学	Gerodontology	8441	8442	8443
全人的医療開発学 Comprehensive Patient Care	62	臨床検査医学	Laboratory Medicine	7181	7182	7183
	63	救命救急医学	Critical Care Medicine	7191	7192	7193
	64	心療・緩和医療学	Liaison Psychiatry and Palliative Medicine	7201	7202	7203
	65	臨床腫瘍学	Clinical Oncology	7241	7242	7243
	66	薬物動態学	Pharmacokinetics and Pharmacodynamics	7211	7212	7213
	67	臨床医学教育開発学	Medical Education Research and Development	7221	7222	7223
	68	救急災害医学	Acute Critical Care and Disaster Medicine	7231	7232	7233
	69	障害者歯科学	Dentistry for Persons with Disabilities	8451	8452	8453
	70	総合診療歯科学	General Dentistry	8461	8462	8463
	71	歯科心身医学	Psychosomatic Dentistry	8471	8472	8473
	72	歯科医療行動科学	Behavioral Dentistry	8481	8482	8483
	73	顎関節口腔機能学	Temporomandibular Joint and Oral Function	8491	8492	8493
認知行動医学 Cognitive and Behavioral Medicine	74	神経機能形態学	Neuroanatomy and Cellular Neurobiology	7251	7252	7253
	75	システム神経生理学	Systems Neurophysiology	7261	7262	7263
	76	細胞薬理学	Pharmacology and Neurobiology	7271	7272	7273
	77	分子神経科学	Molecular Neuroscience	7281	7282	7283
	78	神経病理学	Neuropathology	7291	7292	7293
	79	眼科学	Ophthalmology and Visual Science	7301	7302	7303
	80	耳鼻咽喉科学	Otorhinolaryngology	7311	7312	7313
	81	脳神経病態学	Neurology and Neurological Science	7321	7322	7323
	82	精神行動医科学	Psychiatry and Behavioral Sciences	7331	7332	7333
	83	脳神経機能外科学	Neurosurgery	7341	7342	7343
	84	血管内治療学	Endovascular Surgery	7351	7352	7353

Department	No.	Subject		Code		
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生体環境応答学 Bio-Environmental Response	85	免疫アレルギー学	Immune Regulation	7361	7362	7363
	86	ウイルス制御学	Molecular Virology	7371	7372	7373
	87	免疫治療学	Immunotherapeutics	7381	7382	7383
	88	環境生物学	Cellular and Environmental Biology	7391	7392	7393
	89	生体防御学	Biodefense Research	7401	7402	7403
	90	病態細胞生物学	Pathological Cell Biology	7411	7412	7413
	91	代謝応答化学	Pathological Biochemistry	7421	7422	7423
	92	免疫応答制御学	Immunology	7431	7432	7433
	93	発生発達病態学	Pediatrics and Developmental Biology	7441	7442	7443
	94	膠原病・リウマチ内科学	Medicine and Rheumatology	7451	7452	7453
	95	皮膚科学	Dermatology	7461	7462	7463
器官システム制御学 Systemic Organ Regulation	96	人体病理学	Human Pathology	7471	7472	7473
	97	細胞生理学	Physiology and Cell Biology	7481	7482	7483
	98	分子細胞循環器学	Molecular Cellular Cardiology	7491	7492	7493
	99	分子代謝医学	Molecular Medicine and Metabolism	7501	7502	7503
	100	幹細胞制御	Stem Cell Regulation	7511	7512	7513
	101	分子薬理学	Molecular Pharmacology	7521	7522	7523
	102	細胞機能調節学	Molecular Cell Biology	7531	7532	7533
	103	形質発現制御学	Functional Genomics	7541	7542	7543
	104	統合エピゲノミクス	Epigenetics	7551	7552	7553
	105	時間生物学	Chronobiology	7561	7562	7563
	106	幹細胞医学	Stem Cell Biology	7571	7572	7573
	107	統合呼吸器病学	Respiratory Medicine	7581	7582	7583
	108	消化器病態学	Gastroenterology and Hepatology	7591	7592	7593
	109	腫瘍外科学	Surgical Oncology	7601	7602	7603
	110	循環制御内科学	Cardiovascular Medicine	7611	7612	7613
	111	心肺統御麻酔学	Anesthesiology	7621	7622	7623
	112	心臓血管外科学	Cardiovascular Surgery	7631	7632	7633
	113	腎臓内科学	Nephrology	7641	7642	7643
	114	生殖機能協関学	Comprehensive Reproductive Medicine	7651	7652	7653
	115	腎泌尿器外科学	Urology	7661	7662	7663
	116	食道・一般外科学	Esophageal and General Surgery	7671	7672	7673
	117	呼吸器外科学	Thoracic Surgery	7681	7682	7683

Department	No.	Subject		Code		
				Lecture	Practice	Lab
先端医療開発学 Advanced Therapeutic Sciences	118	臨床解剖学	Clinical Anatomy	7691	7692	7693
	119	システム発生・再生医学	Systems Biomedicine	7701	7702	7703
	120	包括病理学	Comprehensive Pathology	7711	7712	7713
	121	分子腫瘍医学	Molecular Oncology	7721	7722	7723
	122	診断病理学	Surgical Pathology	7731	7732	7733
	123	疾患モデル動物解析学	Experimental Animal Model for Human Disease	7741	7742	7743
	124	シグナル遺伝子制御学	Signal Gene Regulation	7751	7752	7753
	125	生体機能分子科学	Biofunctional Molecular Science	7761	7762	7763
	126	医薬品化学	Medicinal Chemistry	7771	7772	7773
	127	先端計測開発医学	Biomedical Devices and Instrumentation	7781	7782	7783
	128	先端機器開発医学	Medical Instrument	7791	7792	7793
	129	生体システム	Biosystem Regulation	7801	7802	7803
	130	生体界面工学	Biointerface Engineering	7811	7812	7813
	131	材料機能創成学	Materials Science and Bioengineering	7821	7822	7823
	132	遺伝制御学	Genetic Regulation	7831	7832	7833
	133	生命情報学	Bioinformatics	7841	7842	7843
	134	遺伝子応用医学	Applied Gene Medicine	7851	7852	7853
	135	分子細胞遺伝学	Molecular Cytogenetics	7861	7862	7863
	136	遺伝生化学	Biochemical Genetics	7871	7872	7873
	137	構造生物学	Structural Biology	7881	7882	7883
	138	血液内科学	Hematology	7891	7892	7893
	139	分子内分泌代謝学	Molecular Endocrinology and Metabolism	7901	7902	7903
	140	肝胆膵・総合外科学	Hepato-Biliary-Pancreatic Surgery	7911	7912	7913
	141	整形外科学	Orthopaedic and Spinal Surgery	7921	7922	7923
	142	画像・核医学開発学	Investigative Radiology and Endoscopy	7931	7932	7933

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]

If you register "Initial Research Training", you must choose one "for Japanese" (Code: 3002) or "for international students" (Code: 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 Affair Section

TEL 5803-4679, 4676

Table

Initial Research Training FY2013
Graduate School of Medical and Dental Sciences

Date : Mon. 22nd April to Fri. 26th April 2013

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

Opening Remarks : Dean, Graduate School of Medical and Dental Sciences at 14:30 22nd April

Timetable :

date	First (14:40～15:40)	Second (15:50～16:50)	Third (17:00～18:00)
22-Apr Mon.	Ethics of Researcher MORITA Ikuo Cellular Physiological Chemistry Professor	To conduct a safe and fair research TERAOKA Hirobumi Office for Research Safety and Management Professor emeritus	Thesis Writing and Presenting Research CLEARY Kevin International Exchange Center Associate Professor
23-Apr Tue.	Introduction to Bioinformatics MOGUSHI Kaoru Computational Biology Assistant Professor	Methods for studying the development NISHINA Hiroshi Developmental and Regenerative Biology Professor	How to make scientific researches reliable and successful TAGA Tetsuya Stem Cell Regulation Professor
24-Apr Wed.	Instrumental analysis for life science KASAMA Takeshi Instrumental Analysis Research Division Associate Professor	Use and Handling of Radioisotopes and Radiations HARA Masayuki General Isotope Research Division Associate Professor	Study of Functional gene and genome NAKAMURA Masataka Human Gene Sciences Research Division Professor
25-Apr Thu.	The Design of Animal Experiments KANAI Masami Center for Experimental Animal Professor	Immunology in Medical Research KANNAGI Mari Immunotherapeutics Professor	Biosafety and basic microbiological techniques YAMAOKA Shoji Molecular Virology Professor
26-Apr Fri.	Bioethics YOSHIDA Masayuki Life Science and Bioethics Research Center Professor	* Literature search・Utilization of library KINOSHITA Atsuhiro Institute for Library and Media Information Technology Professor	* Collaborative Institutional Training Initiative JAPAN program AI Masumi Life Science and Bioethics Research Center Junior Associate Professor

*4th floor, M&D Tower

Basic-Clinical Borderless Education

Lecture (Code: 8603, 1st ～2nd year: 6units)

1. Instructors:

Contact person: Ikuo Morita TEL 5803-5575 E-mail morita.cell@tmd.ac.jp

2 Description and Timetable

This course consists of "course lectures" and "research progress meeting". At the end of the course, understanding and exploring the interrelation between the basic and clinical research is achieved.

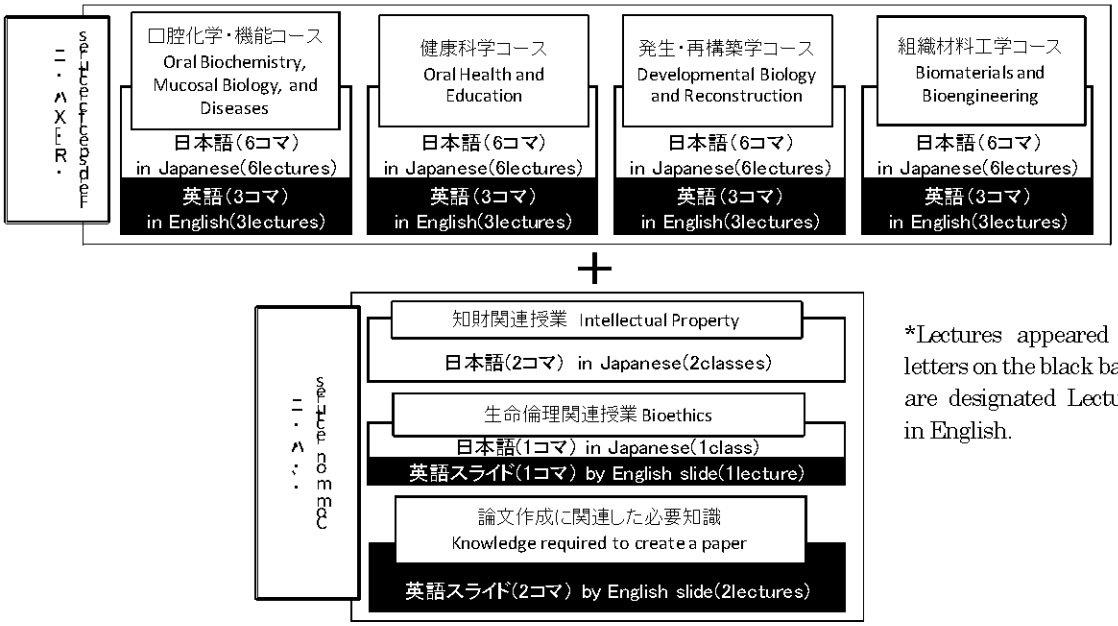
Course Lectures

Outline:

Students who take this course will select one of following five lecture series.

- Oral Biochemistry, Mucosal Biology and Diseases
- Oral Health and Education
- Developmental Biology and Reconstruction
- Biomaterials and Bioengineering
- Lecture Series in English

Each lecture series comprises 9 field specific lectures and 6 common lectures. Lecture series in English is composed of three lectures held in English from each research field (total 12 lectures) and 3 common lectures in which the slides are presented in English.



*Lectures appeared in white letters on the black background are designated Lecture Series in English.

Each lecture series provides current topics in the research field with the interest in the methods, basic study and the possibility of clinical application.

Common lectures are set up for understanding the bioethics, intellectual properties and the basics knowledge required for conducting the research.

For the detail of the lectures including the schedule, venues, please check the website and bulletin board.

Research progress meeting

Outline:

Our program adopted a "Three supervisor system". For each student, the main supervisor and two sub-supervisors are selected from both basic and clinical teaching staffs.

The three supervisor system works to improve research plans and directions of the student by holding regular discussions, and supports students to write papers (thesis).

By the middle of 2nd year grade three supervisors are selected according to the research theme of each student. A notice of research progress meeting is issued by Dept. of educational affairs twice a year and students arrange their meeting with their supervisors. After the meeting, a report with the fixed form is submitted to Dept. of educational affairs. The submission deadline is the end of June and December. The submission of the report is required for credit earning, and the data is used to verify the research progress and focus on problems.

Note:

In case of postponement of the research progress meeting, consult with the main-supervisor and inform Dep. of educational affairs. Change of the supervisor shall be discussed with the professor of affiliated section and informed to Dept. of educational affairs. Research progress meeting is carried out until completion of writing the manuscript.

3. Course Format:

Course Lectures and group discussion (research progress meeting)

4. Venue:

For venues and other detailed information, please check the website and bulletin board.
For the research progress meeting, the students arrange the venue by themselves.

5. Grading:

Evaluation will be given according to the participation in the lecture series and report submission of the research progress meeting. The research progress meeting report needs to be submitted more than once by the end of 2nd year,.
Course outline is introduced at the first lecture of each lecture series, therefore registered students are asked to attend it.

6. Notes:

For detailed information, please check the website and bulletin board.
URL http://www.tmd.ac.jp/dent/cell/borderless/seminar/course.html

Oral Pathology

Lecture (Code:8011, 1st-year : 6 units)
Practice (Code:8012, 1st-～2nd-year: 4 units)
Lab (Code:8013, 2nd-～3rd-year: 8 units)

1. Instructors:

Dr. Akira Yamaguchi (Professor)
Dr. Kei Sakamoto (Lecturer)
Dr. Kou Kayamori (Assistant professor)
Contact person: Dr. Akira Yamaguchi E-mail akira.mpa@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

We aim to provide a fundamental knowledge to understand the causes and mechanisms of various diseases and their associated changes at histological and molecular levels.

Available programs:

Seminar Every other Wednesday, 9:00-10:30 (November and December)

Practice

Goals/Outline:

We aim to provide a fundamental knowledge to understand the causes and mechanisms of disease and the associated alterations of structure and function at the tissue and organ levels..

Available programs:

Journal club Every other Wednesday, 9:00-10:30 (November and December)

Lab

Goals/Outline:

We aim to provide basic techniques commonly used in pathological laboratories.

Available program:

Practice for preparation of histological specimens including immunohistochemistry.

3. Format:

Lab seminar, Journal club and Laboratory practice

4. Venue:

Conference room of the Section of Oral Pathology, 4th floor of the 1st building East

5. Grading:

The overall grading scheme is based on a case-by-case evaluation of each student's growth and progress. Every effort shall be made to evaluate each student based on their starting point and the motivation, effort, enthusiasm, time and energy that he/she contributes to the class.

6. Notes:

Bacterial Pathogenesis

Lecture (Code:8021,1st-year : 6 units)
Practice (Code:8022,1st-～2nd-year: 4 units)
Lab (Code:8023,2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Ichiro Nakagawa
Associate Professor; Fumito Maruyama
Assistant Professor: Takashi Nozawa
Contact person: Ichiro Nakagawa E-mail ichiro-n.bac@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Our major research interests are to elucidate the bacterial evolution to escape from the host immune responses, and cellular defence mechanisms against bacterial infections. Therefore, our mission is not simply to give knowledge of microbiology but give talent to apply knowledge to lead appropriate diagnosis and treatment at the clinics. On this point of view, our lectures covered not only oral microbiology but also systemic microbiology and clinical microbiology to understand the variety of infectious diseases.

1. Bacterial whole genome analysis.
2. Analysis of bacterial survival strategy based on bacterial whole genome gene expression.
3. Comparative genomics for bacterial gene acquisition and evolution systems.
4. Molecular analysis of recognition system and inflammation responses against bacterial infection.

Available programs:

Lecture: As occasion demands

Special Lecture: As occasion demands

Seminar: As occasion demands

Journal Club & Conference : Every Monday, 18:00-20:00

Practice and Lab

Goals/Outline:

We focus (1) the analysis of pathogenic bacterial evolution, (2) molecular mechanisms of recognition systems and inflammatory induction against bacterial pathogens. To achieve our mission, we are analyzing complete genomic sequences of various bacterial pathogens and comparative genomics, including genus streptococci (*Streptococcus pyogenes* and *S. mutans*), *Porphyromonas gingivalis*, and cellular and molecular biological analyses for host responses.

Available program:

Participation in a research group of Bacterial culture and Bioinformatis as occasion demands.

3. Format:

As a general rule, a few student are available for the participation.

4. Venue:

M&D Tower 8F South, Lecture room and Laboratory of Bacterial Pathogenesis.

5. Grading:

Comprehensive assessment of lectures, practices and laboratory works.

6. Notes:

Basically lecturers are in English.

Molecular Immunology

Lecture (Code:8031,1st-year : 6 units)
Practice (Code:8032,1st-～2nd-year: 4 units)
Lab (Code:8033,2nd-～3rd-year: 8 units)

1. Instructors:

Professor Miyuki AZUMA Assistant Professor Tatsukuni OHNO
Contact person: Department of Molecular Immunology Miyuki AZUMA E-mail: miyuki.mim@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Main objective of Molecular Immunology in the graduate course is to understand and study how the immune system works for biological defense. Students also learn immunopathology and immunophysiology of systemic and organ-specific immune diseases and how the immune diseases control and regulate.

Available programs:

Lecture Every Monday from May 13 to July 1, 17:00 -19:00

Special Lecture A/N (during the above lecture period)

Seminar A/N

Journal Club Odd Week Saturday 15:30-17:30

Conference A/N

Practice

Goals/Outline:

To learn how to study immunological topics

Available programs:

Journal Club Odd Week Saturday 15:30-17:30

Lab

Goals/Outline:

To obtain fundamental techniques for immunological research

Available program:

A/N

3. Format:

Presentation by a small group and comprehensive discussion

4. Venue:

M&D tower, 6F Seminar room 11

5. Grading:

Comprehensive assessment

6. Notes:

Lectures have been made in English (It depends on participants)

Advanced Biomaterials

Lecture (Code:8041, 1st-year : 6 units)
Practice (Code:8042, 1st-～2nd-year: 4 units)
Lab (Code:8043, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Motohiro UO, Associate Professor: Toshio HONGO, Assistant Professor: Takahiro WADA
Part-time senior lecturer: Yujin AOYAGI
Contact person: Motohiro UO E-mail: uo.abm@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Upon successful completion of the course, the student will be able to:

1. Describe the basic classification of dental materials
2. Understand basic characteristics of recent dental materials
3. Explain current scientific theory regarding evaluating mechanical properties
4. Discuss characteristics of recent representative oral biomaterials and equipment.

Available programs:

Lecture	Thursday morning, 10 am - 12 am (May and June)
Special Lecture	As needed (normally, 4 times per one year)
Seminar	1st and 3rd Monday afternoon (2 pm - 3 pm)
Journal Club	Every Monday afternoon (1pm - 2 pm)
Conference	of the department of restorative sciences will be held four times in year

Practice

Goals/Outline:

Students will be able to explain their research results using PowerPoint.
Students will be able to display their research results as a poster presentation.
Student will be able to discuss their findings with other students.

Available programs:

As needed

Lab

Goals/Outline:

Students should measure basic mechanical properties using testing machine.
Students should determine several hardness values of dental materials.
Student should analyze crystalline component using X-ray diffractometer
Student should analyze atomic vibration using Fourier-transfer-infrared-scopy.

Available program:

Participation in a research group As needed

3. Format:

All coerces are basically few people education system for providing free discussion.

4. Venue:

Please contact the faculty adviser before attending class.

5. Grading:

Comprehensive assessment based on participation and activity for lecture, practice and lab studies.

6. Notes:

Organic Biomaterials

Lecture (Code:8061, 1st-year : 6 units)
Practice (Code:8062, 1st-～2nd-year: 4 units)
Lab (Code:8063, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor Nobuhiko YUI, Assistant Professor Ji-Hun SEO, and Assistant Professor Atsushi TAMURA
Contact person: Nobuhiko YUI E-mail yui.org@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The progress in nano-biotechnology controlling the organization of nano-scaled assemblies in molecular levels is indispensable to the development of novel biomaterials for the next generation. In this lecture, basic concept of polymeric biomaterials will be introduced for understanding the medical applications of nano-materials. Also, recent topics on advanced medicines including drug delivery systems and regenerative medicine will be discussed.

Available programs:

Lecture as needed
Special Lecture as needed
Seminar as needed
Journal Club as needed
Conference as needed

Practice

Goals/Outline:

To research recent studies on biomaterials for learning more about advanced investigation and training logical thinking for the research works.

Available programs:

Every Wednesday from 16:00 to 18:00 (detailed schedule is to be announced)

Lab

Goals/Outline:

To evaluate the functionalities of a variety of biomaterials designed in the laboratory in terms of their final goals in the fields of drug delivery and regenerative medicine. For example, to characterize nano-biomaterials, investigate the properties in drug delivery performance, and evaluate the cellular interaction with these biomaterials.

Available program:

As needed

3. Format:

To do either in a didactic manner or in reading references in turns, and to give any opportunity for mutual discussions.

4. Venue:

To be announced.

5. Grading:

To evaluate both the attendance (the lecture, practice and lab.) and the score of the reports submitted.

6. Notes:

none

Functional Material

Lecture (Code:8071,1st-year : 6 units)
Practice (Code:8072,1st-～2nd-year: 4 units)
Lab (Code:8073,2nd-～3rd-year: 8 units)

1. Instructors:

Tsuyoshi Kimura Kwangwoo Nam
Contact person: Tsuyoshi Kimura E-mail kimurat.mbme@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The objective is to understand the materials, especially polymeric materials, for medical use. In the lecture, material characterization, scaffold for regenerative medicine and tissue engineering, synthetic vector for drug and gene therapy and stem cell engineering are introduced and explained.

Available programs:

Lecture Unfixed (Please ask the instructors about schedule)

Practice

Goals/Outline:

The objective is to understand how novel polymeric materials are studied and developed, and to learn how to read, summarize, and write a research paper. Survey of newly published paper related to new materials will be done as required. Student will be asked to read and explain the paper in the research group seminar.

Available programs:

Seminar Thursday, Every week, 17:00-20:00

Lab

Goals/Outline:

The objective is to learn the skill necessary for the research of functional materials (polymer synthesis, characterization, cell culture and animal experiment)

Available program:

Participation in a research group Any time

3. Format:

3 parts of lecture will be held. Please ask to contact person.

4. Venue:

Lecture room will be informed by contact person.

5. Grading:

Scoring will be done by the result of attendance and the achievement of the report.

6. Notes:

Oral Radiation Oncology

Lecture (Code:8081, 1st-year : 6 units)
Practice (Code:8082, 1st-～2nd-year: 4 units)
Lab (Code:8083, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor Masahiko MIURA
Contact person Masahiko MIURA E-mail masa.mdth@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Oral Radiation Oncology is a branch of radiation oncology dealing with basic radiobiology, translational research, and radiotherapy for oral cancer. Main objective of this branch in the graduate course is to provide opportunities to study biological strategies for radiosensitization, development of radiosensitizers, molecular mechanisms of tumor radioresistance, the state of the art technology of radiotherapy, and basis of individualized radiotherapy depending on each student's research projects.

Available programs:

Lecture	Oct. 3- Dec. 19, 2013 on every Thurs. 8:00am-9:00am Molecular Biology for Radiation Oncology
Special Lecture	Sep.30-Oct.4, 2013 at Tamachi Campus, Tokyo Institute of Technology Training Program for Specialists in Cancer : Radiation Biology Course
Journal Club	Every Other week on Thurs. 8:00am-9:00am
Research in Progress	Every Other week on Thurs. 8:00am-9:00am
Reading by turns	Every Tues. 8:00am-9:00am

Practice

Goals/Outline:

The outline of Practice is to diagnose varying types of the primary and locoregional sites of oral cancer and to learn how to treat them by radiotherapeutic methods including 3D-conformal radiotherapy and brachytherapy, and multidisciplinary treatments.

Available programs:

Clinical Conference Every other week on Fri.

Lab

Goals/Outline:

The outline is to learn basic techniques required for our research themes (tissue culture techniques, X-ray irradiation, radiation dosimetry, Western blotting, gene transfer etc.)

Available program:

Participate in each research group

3. Format:

To give lectures and practice in front of small number of students.

To cultivate ability to extract problems and constitute your own notion through discussions.

4. Venue:

Make sure by contacting me before each lecture or seminar

5. Grading:

Totally evaluate students' achievements based on the presence to lectures or seminars and research activity.

Oral and Maxillofacial Surgery

Lecture (Code:8091, 1st-year : 6 units)
Practice (Code:8092, 1st-～2nd-year: 4 units)
Lab (Code:8093, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor : Ken Omura, Associate Professor : Hiroyuki Harada,
Junior Associate Professor : Yuji Kabasawa, Assistant professor : Minoru Ikuta, Masaru Sato
Part-time lecturer: Yutaka Maruoka, Yusuke Nakajima
Contact person: Oral and Maxillofacial Surgery Ken Omura E-mail omura.osur@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The program is designed for understanding the broad knowledge and basic skills which are important for diagnosis, treatment, prognosis and prevention of oral and maxillofacial diseases.

Available programs:

Lecture	As needed
Special Lecture	As needed
Seminar	As needed
Staff conference	Every Thursday 18:00 to 20:00

Practice

Goals/Outline:

The program is designed for understanding the clinical, imaging and pathological features which are important for diagnosis of oral and maxillofacial diseases. And the program is designed for determining the optimal treatments considering cosmesis and functions and practicing them in both outpatient and inpatient clinics.

Available programs:

Conference for new patients	Every Monday 16:30 to 17:30, Every Wednesday 16:30 to 17:30
Special clinic and conference for oral cancer	Every Tuesday 13:30 to 16:00, Every Friday 11:00 to 14:00
Conference with Department of Diagnostic Radiology and Oncology	Every other Friday 18:00 to 19:00
Conference for oral cancer	Every Friday 18:00 to 20:00
Conference for facial deformities	Second and third Friday of every month 15:00 to 16:00
Preoperative conference	Every Thursday 17:00 to 18:00

Lab

Goals/Outline:

Participate in research in the following fields, and learn the basic methods and skills for experimentation.

Available program:

1. Molecular biological research related to invasion and metastasis of oral cancer.
2. Research related to dysfunction and QOL following oral cancer surgery.
3. Research related to distraction osteogenesis.
4. Research related to mandibular reconstruction through tissue engineering.
5. Research related to cleft palate and cleft lip bone grafting.

3. Format:

Small groups with maximum opportunity for discussion.

4. Venue:

Seminar room of the Department of Oral and Maxillofacial Surgery (Faculty Building of University Hospital of Dentistry, 9th floor). However, please confirm the location in advance with the instructor.

5. Grading:

Evaluation is based on participation (attendance) in lectures, practices and labs and on acquisition of skills and knowledge, and it is added to an evaluation when there is a presentation at the academic meeting.

6. Notes:

Oral and Maxillofacial Radiology

Lecture (Code:8101, 1st-year : 6 units)
Practice (Code:8102, 1st-～2nd-year: 4 units)
Lab (Code:8103, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Tohru Kurabayashi Associate Professor: Hiroshi Watanabe
Junior Associate Professor: Naoto Ohbayashi, Norio Yoshino
Contact person: Tohru Kurabayashi E-mail kura.orad@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Main objective is to provide students opportunity to study advanced imaging modalities including digital imaging, cone-beam CT, multi-detector row CT and MRI.

Available programs:

Lecture in the first semester

Special Lecture uncertain (depending on the schedule of the lecturer)

Seminar in the first semester

Journal Club Thursday, 17:00-18:00

Conference Tuesday, 8:15-

Practice

Goals/Outline:

The goal of the practice is mainly to obtain the professional skills of interpreting both conventional and sectional images of dento-maxillo-facial region.

Available programs:

Clinical training: any time (depending on the schedule of the instructors and students)

Lab

Goals/Outline:

The main objective is to learn how to plan clinical research concerning imaging diagnosis and analyze the data.

Available program:

Students can participate in any research group in Oral and Maxillofacial Radiology.

3. Format:

The format depends on the instructor who teaches the students.

4. Venue:

Oral Radiology Department of Dental Hospital (B1 floor) or laboratories of Oral and Maxillofacial Radiology (9th floor)

5. Grading:

The attitude of the students in each program will be evaluated.

6. Notes:

Lectures are mostly held in Japanese.

Anesthesiology and clinical physiology

Lecture (Code:8111, 1st-year : 6 units)
Practice (Code:8112, 1st-～2nd-year: 4 units)
Lab (Code:8113, 2nd-～3rd-year: 8 units)

1. Instructors:

Contact person: Prof. Haruhisa Fukayama E-mail fukayama.anph@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Learners will consider generally the basic knowledge of local anesthesia, general anesthesia, psycho-sedation, systemic management and pain control in dentistry, and establish the basements of specialists in anesthesiology and clinical physiology. Learners will acquire the pharmacological action and action mechanism through discussion, clinical settings and research works. The aims of this course were to clarify the neuro–physiological pain mechanisms and their modulation ways, and to develop the new pain control methods and new local anesthesia methods. The other aims are to investigate the pain relative intrinsic biologically active substance and to clarify the occurrence mechanism of refractory pain diseases using molecular biology methods, and finally to establish the new treatment methods.

Available programs:

Lecture	at any time
Special Lecture	at all time
Seminar	at any time
Journal Club	Every Thursday (17:00-18:00)
Conference	Monday to Friday (10:30am -12:00 a m)

Practice

Goals/Outline:

Learners will acquire the physiological and pharmacological basic knowledge and methods in dental clinical settings of local anesthesia, general anesthesia and pschyco-sedations, and also learn about the pathology of pain diseases.

Available programs:

Presentation of research at any time
Clinical practice assigned
Research in clinical settings

Lab

Goals/Outline:

The aims of the course are to establish and develop the non-invasive percutaneous and per mucosal drug delivery, and also clarify the pain occurrence mechanism and develop their managements. The reaction to the pain of living body will be studied.

Available program:

Learners are available to join the following research groups.

1) Research of mechanism in Diffuse Noxious Inhibitory Controls
2) Research in Drug delivery system
3) Research in relation between pain and autonomic nervous system
4) Research of occurrence mechanism of neuropathic pain.

3. Format:

Learners will be able to attend the seminars, clinical conferences and special lectures available at any time.

Seminar attendants will present and discuss about their own research process. Clinical conference attendants will be trained in clinical settings in assigned days.

4. Venue:

Learners must confirm the venues before attending the seminar, conferences and lectures, because the different places may be used

5. Grading:

The course attendants will be generally assessed in the base of their attitudes to the lecture, seminar, and laboratory work including their attendance and achievement of their research.

6. Notes:

Orofacial Pain Management

Lecture (Code:8121, 1st-year : 6 units)
Practice (Code:8122, 1st-～2nd-year: 4 units)
Lab (Code:8123, 2nd-～3rd-year: 8 units)

1. Instructors:

Prof. Shimada Masahiko
Contact person: Prof. Shimada Masahiko E-mail mshimada.ofpm@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Main objective of orofacial pain management in the postgraduate course is to lectures on the basis of the diagnosis and treatment of the disease with a pain, abnormal sensation, sensory paralysis, abnormal movement and motor paralysis in the orofacial area, in particular, mechanism of pain, neuropathic pain, so on.

Available programs:

Lecture	16:00～17:00, every Monday from Oct to Nov.
Special Lecture	A special lecture has been irregularly held.
Seminar	A seminar has been irregularly held.
Journal Club	The fourth Wednesday every month, 18:00~19:00
Oriental oral medicine Seminar	The fourth Wednesday every month, 18:00~19:00

Practice

Goals/Outline:

The purpose of practice is to study the basis of the diagnosis and treatment of the disease with a pain, abnormal sensation, sensory paralysis and motor paralysis in the orofacial area

Available programs:

Clinical Conference has been held the fourth Wednesday every month, 18:00~19:00

Clinical training has been performed on Monday, Tuesday , Thursday, Friday , 9:00~12:00

Lab

Goals/Outline:

The main goal is to plane the design of Experiment concerning pain and abnormal sensation.

Available program:

Participation in the research group would be possible at any time.

3. Format:

It is basically assumed the few people system. The place for debating is installed as much as possible to improve the interrelation with the student.

4. Venue:

Confirm it to the charge contact person.

5. Grading:

An integrated evaluation is done based on the participation situation to the lecture and research content.

6. Notes:

None

Pediatric Dentistry

Lecture (Code:8131, 1st-year : 6 units)
Practice (Code:8132, 1st-～2nd-year: 4 units)
Lab (Code:8133, 2nd-～3rd-year: 8 units)

1. Instructors:

Assistant Professor: Yoshiaki Ono
Contact person: Yoshiaki Ono E-mail : y-ono.dohs@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

This lecture will guide students to understand the oro-facial functions, such as sucking, mastication, swallowing, and articulation, being developed and acquiered during newborn period and childhood as well as growth and development of the related tissues and organs in this region. They are also taught pathogenesis and pathophysiology of the diseases that disturb development and acquirement of these functions. Students will study theory and method not only for the developmental guidance of the oro-facial functions but also for diagnosis, prevention and treatment of the related diseases and malfunctions.

Available programs:

Lecture : According to the schedule of the graduate school.
Special lecture : According to the schedule of the graduate school.
Seminar :
Journal club : Tuesday 16:30~17:30, Friday 13:00~14:00
Conference : Friday 1700~1800

Practice

Goals/outline:

The comprehensive dental practice for child patients will guide student to understand the developmental processes of the oro-facial functions, and to study the outline of the method for diagnosis, prevention and treatment of the related diseases and malfunctions. The practice will also provide students to learn theory and method for the developmental guidance of these functions in the clinical viewpoints.

Available program:

Clinical conference : Friday 18:30~19:00

Lab

Goals/outline:

The students will analyze the developmental processes of the oro-facial functions as well as the growth processes of the related organs by the morphological, physiological and biological aspects to develop the method for the developmental guidance of these functions. The students also analyze pathogenesis and pathophysiology of the diseases that disturb development and acquirement of these functions to develop new methods for the treatment and prevention of the diseases.

Available program:

The students can join any research groups at any time.

Research theme:

1) The study on the physiology and molecular biology of the oro-facial functions of children.
2) The morphological and biochemical study on the development and developmental disturbances of teeth

3) The morphological study on the growth of dental arches, occlusion, jaws and face
4) The study on the development of new materials and methods for the dental treatments of child patients

3. Format

Seminar style

4. Venue

Unfixed. The students should make a contact with the teacher in advance.

5. Grading

Be assessed by the situation of class attendance and the research planning of each student. Any research report or paper presentation in a meeting will also be used to assess for grading.

Orthodontic Science

Lecture (Code:8141, 1st-year : 6 units)
Practice (Code:8142, 1st-～2nd-year: 4 units)
Lab (Code:8143, 2nd-～3rd-year: 8 units)

1. Instructors:

Takashi Ono, Professor and Chairman
Contact person:Takashi Ono, Orthodontic Science E-mail: t.ono.orts@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals:

Orthodontic Science is one of the dental sciences which propose to control teeth, periodontium, and craniofacial growth and development in equilibrium with the whole body, and also deals with the prevention and/or treatment of malocclusion and related disorders, by which the alteration of maxillofacial function with aging could be kept to the most suitable condition.

Outline:

1) To explain the unhealthy physiological condition of malocclusion and deepen the scientific basis for orthodontic treatment.
2) To understand the biological reaction and adaptation of occlusal tissues to mechanical stresses such as occlusal force or orthodontic force, and also the changes with aging.
3) To explain the art for controlling the morphologic and functional problems of occlusion in orthodontic treatment, from the view points of biomaterials and biomechanics.
4) To enlighten the social dentistry for the needs and demands of orthodontic treatment.

Available programs:

Lecture	as needed
Special Lecture	as needed
Seminar	as needed

Practice

Goals/Outline:

To understand the alteration of occlusal function and morphology, and to explain the pathological condition of malocclusion from the viewpoint of physiology, biomechanics, biology and sociology.

Available programs:

Training for clinical examination	as needed
Clinical practice (see patients)	4.5 hour/week
Clinical study by observation (treatments, diagnoses)	every Tuesday and Friday, 9:00-12:00
Clinical Conference	as needed
Training for diagnosis and treatment planning (basic skill, typodont)	as needed
Seminar for Sociology	as needed
Department Seminar	every Wednesday and Friday, 17:00-19:00

Lab

Goals/Outline:

To understand the procedure of biological reaction and adaptation of occlusal system to the orthodontic stimuli, including the influence of aging, and to provide the control of the surroundings of the occlusal system.

Available program:

Progress meeting	as needed
Research seminar	as needed

3. **Format:**
   Generally in a small class.

4. **Venue:**
   Contact to the person in charge beforehand.

5. **Grading:**
   Students will be evaluated comprehensively according to the substances and participation in the lecture, practice and lab work.

6. **Notes:**
   The final evaluation will be held in the end of every year to acknowledge the promotion or graduation.

Cariology and Operative Dentistry

Lecture (Code:8151, 1st-year : 6 units)
Practice (Code:8152, 1st-～2nd-year: 4 units)
Lab (Code:8153, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Junji Tagami, Associate professor Masayuki Otsuki
Lecturer: Toru Nikaido, Masatoshi Nakajima, Alireza Sadr, Shoji Nakashima
Assistant professor :Yasushi Shimada, Yuichi Kitasako, Takako Yoshikawa, Go Inoue, Keiichi Hosaka, Tomohiro Takagaki, Noriko Hiraishi

Contact person: Masayuki Otsuki E-mail otsuki.ope@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The goal of this course is to acquire the knowledge about the dental caries including diagnosis, prevention, treatment and restorative materials and to integrate it based on operative dentistry.

Available programs:

Lecture at 17:40- on Wednesday in April – February
English will be used in all lectures

- Introduction of cariology and operative dentistry (Tagami)
- Tooth bleaching (Otsuki)
- Caries diagnosis with fluorescence camera (Otsuki)
- Dentin/enamel bonding mechanism (Nikaido)
- Protection and reinforcement of tooth structures (Nikaido)
- Treatment of carious dentin in adhesive restoration (Nakajima)
- Resin build ups for endodontically-treated tooth (Nakajima)
- Basic theory for bond test (Shimada)
- Cytotoxicity and genotoxicity of resinous materials (Shimada)
- Composite restorations: Polymerization, Adhesion and Adaptation (Yoshikawa)
- Clinical assessment and management of dental caries and tooth wear (Kitasako)
- Dilemma of one step adhesives (Hosaka)
- Fluoride releasing materials and reinforcement of the interface (Inoue)
- The role of functional monomers in recent research: to tooth substrate and dental materials (Takagaki)
- New test for sealing ability of dental composites (A. Sadr)
- Caries management in the era of evidence-based dentistry (A. Sadr)
- Mechanisms of de-/remineralization of enamel and dentin, and fluoride actions (Nakashima)
- Explore the Hybrid Layer! (Hiraishi)

Special Lecture to be announced

Seminar to be announced

Practice

Goals/Outline:

The goal of this course is to understand basic and clinical research about carioloy and operative dentistry and to form a research project of own research.

Available programs:

group discussion
practice of presentation

Lab

Goals/Outline:

The goal of this course is to master the experimental technique to perform own project.

Available program:

participation in each research project group

3. Format:

Practice and Lab are organized in small group.

4. Venue:

to be announced

5. Grading:

Scored by attendance, report and/or examination

6. Notes:

To take Lecture is required for participation in Practice and Lab.

Fixed Prosthodontics

Lecture (Code:8161, 1st-year : 6 units)
Practice (Code:8162, 1st-～2nd-year: 4 units)
Lab (Code:8163, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Hiroyuki Miura Associate Professor: Keiichi Yoshida
Lecturer: Daizo Okada ,Wataru Komada
Assistant Professor: Chiharu Shin, Shiho Otake, Kenichi Goshima, Kouichiro Yusa, Naosuke Kumagae, Reiko Ogura
Adjunct instructor: Eiichi Bando, Keiichi Sasaki, Masanori Nakano
Contact person: Daizo Okada E-mail d.okada.fpro@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Integrated learning of matters related to recover and maintain proper eating functions.

Commentary from a biological standpoint on the methods for recovering from functional and cosmetic disturbances of oral and maxillofacial area caused by defect and loss of teeth

Available programs:

Lecture every Wednesday (17:30 18:30)
Special Lecture A/N
Seminar A/N
Journal Club every Thursday (17:00 18:00)
Conference A/N

Practice

Goals/Outline:

Learning of mandibular movements and reproducibility of mandibular movements on the articulator

Learning of mechanism of semi-adjustable articulator and its effect on occlusal surface configuration of prosthetics

Available programs:

training seminars for new recruits A/N

Lab

Goals/Outline:

Learning of objective diagnosis method of oral functions

Learning of experimental methodology for measurements of mandibular movements, and masticatory efficiency and functional testing of occlusal functions (tooth contact, tooth displacement, occlusal force)

Available program:

Participation in a research group A/N

3. Format:

Small group instruction

4. Venue:

Refer to contact person

5. Grading:

Comprehensive evaluation based on the research content and the record of attendance at lecture, practice and lab

6. Notes:

n.p.

Pulp Biology and Endodontics

Lecture (Code:8171, 1st-year : 6 units)
Practice (Code:8172, 1st-～2nd-year: 4 units)
Lab (Code:8173, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Hideaki Suda Associate Professor: Mitsuhiro Sunakawa
Junior Associate Professor: Atsushi Takeda, Hideharu Ikeda
Assistant Professor:Jun Kawamura
Part-time Lecturer: Haruo Azuma, Takahiro Hanada, Koichi Henmi
Contact person: Hideaki Suda, Pulp Biology and Endodontics, E-mail: h.suda.endo@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

We educate biological, immunological and electrophysiological characteristics of the dentin/pulp complex and periapical tissue, and also their diseases, especially focusing on preservation of the tooth pulp. All students are given topics of the newest endodontic procedures.

Available programs:

Lecture	Every Friday in October and November	10：00～12：00
Special Lecture	as needed	
Seminar	as needed	
Journal Club	Every Thursday	16：30～17：30

Practice

Goals/Outline:

All students are asked to exercise problem-solving of various clinical cases, including diagnosis and management of dental pain, preservation of the tooth pulp, strategies to deal with complex root canal system and surgical endodontics.

Available programs:

Clinical Conference	Every Thursday	17：30～18：30

Lab

Goals/Outline:

All students can participate in various research programs, such as laser application to endodontics, immunohistochemical study, electrical measurements of the tooth and surrounding tissues and electrophysiological study, and invent a research plan for their clinical application to endodontics.

Available program:

Participation in a research group	as needed

3. Format:

Lectures are performed in small groups. Sufficient question and discussion time is allocated to urge the student to participate in the lecture actively.

4. Venue:

Lectures are held in the 4th Lecture Room on the 4th floor, the 3rd Lecture Room on the 2nd floor, and the Demonstration Room on the 5th floor, of Building 7 (Faculty of Dentistry and Animal Research Center Building). The venues for the other programs are announced differently.

5. Grading:

Comprehensive assessments are performed based on the efforts made by the student toward the lecture, practice and lab.

6. Notes:

All lectures are presented in English.

Removable Partial Denture Prosthodontics

Lecture (Code:8181, 1st-year : 6 units)
Practice (Code:8182, 1st-～2nd-year: 4 units)
Lab (Code:8183, 2nd-～3rd-year: 8 units)

1. Instructors:

Contact person: Noriyuki WAKABAYASHI(Associate Professor)E-mail: wakabayashi.rpro@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The Removable Partial Denture as one of the artificial dental organs is indicated to substitute and restore the lost occlusal function and sensation when the teeth are lost by various reasons.

It is our aim to learn and study the physiological basis such as periodontal and mucosal sensation to realize, diagnose and treat the partially edentulous patients with various conditions of tooth loss by removable prostheses.

Available programs:

Lecture	Removable Prosthodontics for partially edentulous Patients
Lecturers	N.Wakabayashi, K.Fueki
Term	Every Monday: 21.Oct~25.Nov. 2013.
Time	09:30~11:30
Lecture Room	Library Room in Prosthodontics, 11F of Dental Hospital Building, Yushima Campus
Special Lecture	Anytime
Seminar	Anytime

Practice

Goals/Outline:

The aim of the practice is to introduce, realize and argue the scientific papers for further understanding to get the knowledge of the science and practice related to the Prosthodontics. It is our keen objective to learn and realize how to read, write and criticize the papers related to the prosthodontics. Every candidate is requested to read and introduce the classical and newest papers in turn to all the rest members of the candidates with arguments.

Lab

Goals/Outline:

The aim of the labo-work is to analyze and verify the denture dynamics in function for designing Removable Partial Dentures. Every candidate is requested to be accustomed to handle the ME apparatus to record various phenomena including denture dynamics.

3. Format:

Every candidate has to address his or her opinion freely to the others.

4. Venue:

Verifying the room is necessary according to the program executed.

5. Grading:

Comprehensive assessment is done including attendance of lecture, practice and labo-work and the completion of the theme.

6. Notes:

Contact to the above E-mail address, if necessary.

Oral Implantology and Regenerative Dental Medicine

Lecture (Code:8191, 1st-year: 4 units, 2nd-year: 2 units)
Practice (Code:8192, 1st-year: 2 units, 2nd-year: 2 units)
Lab (Code:8193,2nd-～3rd-year: 8 units)

1. Instructors:

Contact person: Shohei Kasugai TEL 03-5803-5934 E-mail kas.mfc@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Prosthetic treatments with dental implants (dental implant treatment) for edentulous patients have been effective and predictable. The students will be able to learn the characteristics of dental implant treatments and dental implant materials and renew knowledge concerning all steps in dental implant treatment including clinical examinations, treatment planning, implant surgery, prosthodontics procedures and maintenance.

In dental implant treatment bone augmentation and soft tissue management are frequently required. In this course, regenerative treatments, which relate to dental implant treatment, will be presented and discussed. Especially, future possibility of regenerative medicine in dental field will be discussed.

The purposes of this course are to understand current dental implant treatment and its related regenerative dental medicine and to predict the future directions of researches in this field.

Available programs:

Lecture Thursday 18:00 – 19:30

Special Lecture to be announced

Seminar and Journal Club Monday 7:30 - 8:30, 18:00 -19:00

Conference Friday 18 : 00 – 19:00

Practice

Goals/Outline:

The purpose of this program is to understand the points in all steps of dental implant treatment: Clinical examinations, surgery, prosthetic procedures and maintenance. Several clinical cases will presented and treatment planning of these cases will be discussed.

Available programs:

Clinical Conferences Monday – Thursday 17:30-18:30, Friday 18:00 -19:00

Lab

Goals/Outline:

The purposes of this course are to clarify current clinical problems in dental implant treatment and to learn basic concept of plan researches to solve these problems. The researches, which are currently conducted by students in Department of Oral Implantology and Regenerative Dental Medicine, will be presented. The participants of this course will have chances to see animal experiments concerning dental implants and its related regenerative medicine.

Available program:

to be announced

3. Format:

Lectures by the instructors and presentations by the participants regarding the given subjects

4. Venue:

The forth seminar room (7th building, 6th floor), The demonstration room (7th building, 3rd floor), Dental Implant Clinic (Dental Hospital, 7th floor), Animal Facility,

5. Grading:

based on attendance and attitude.

6. Notes:

Lecture and journal club are in English. Students having interests in this field are welcome. Students are encouraged to participate in discussions actively.

Plastic and Reconstructive Surgery

Lecture (Code:7011, 1styear:6units)
Practice (Code:7012, 2ndyear:4units)
Lab (Code:7013, 2nd-~3rdyear: 8 units)

1. Instructors:

Professor Mutsumi Okazaki Lecturer Hikoki Moki
Contact person: Mutsumi Okazaki, *Professor* E-mail okazaki-plas@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals:

To recognize meaning and necessity of plastic surgery, and to understand objective disorders and treatments for them.

Outline:

Explaining concepts of 4 major objectives of plastic surgery, 1: Conjenital anomaly, 2: Traumatic deformity, 3: Deformity after tumor resection and 4: Aesthetic surgery. Furthermore, explaining basic techniques (excision & suture, skin graft, flap transfer and other tissue transplantation) and advanced techniques (microsurgery and craniofacial surgery) as therapeutic modality for objective disorders.

Available programs:

Lecture	As needed	
Special Lecture	As needed	
Seminar	As needed	
Journal Club	Every Tuesday	17 : 30~18 : 30

Practice

Goals:

To decide a suitable treatment for each disorder, to handle surgical instruments and sutures correctly and to explain selected therapeutic procedures logically and perform them.

Outline:

Diciding a therapeutic strategy for each case in preoperative conference, and participating in operations.

Preoperative case conference	Every Tuesday	19:00~20:00
Postoperative case conference	Every Tuesday	20:00~21:00
Research conference	Occasional Tuesday	20:00~21:30
Photo conference	Every Wednesday	8:00~9: 30
Ward round	Every Weekday	9:00~12:30、17:00~18:00
Operation	Every Monday	14:00~17:00 in outpatient oprerating room
	Every Tuesday	9:00~17:00 in main oprerating room
	Every Wednesday	9:00~17:00 in main oprerating room
	Every Thursday	9:00~17:00 in main oprerating room
	Every Friday	9:00~17:00 in main oprerating room

Lab

Goals:

Revealing disease mechanism of objective disorders of plastic surgery, and developing new therapeutic approaches based on experimental results.

Outline:

Acquiring techniques for experimentation and analyzing obtained experimental data.

Participation in a research group As needed

Experimentation of plastic surgery

Contents

1) Microsurgery
2) Vascularized free tissue transfer
3) Cartilage reproduction
4) Culture of keratinocyte and fibroblast
5) Evaluation of blood supply to various flaps using ICG.
6) Analysis of volume and blood supply to the flaps using nano-spectrum CT.

3. **Format:**
   Small-group session is adopted in order for intense discussion.
4. **Venue:**
   Confirm to the instructor in charge before lecture.

5. **Grading:**
   Grade is given based on attitude to lectures, practices and labs and research outcome.

6. **Notes:**
   Journal club and research conference are expected to be held within 5 people, though the number of attendance is not limited.

Head and Neck Surgery

Lecture (Code:7021, 1styear:6units)
Practice (Code:7022, 2ndyear:4units)
Lab (Code:7023, 2nd-~3rdyear: 8 units)

1. Instructors:

Professor: Seiji Kishimoto, Assistant Professor: Takuro Sumi
Contact person: Seiji Kishimoto
Department of Head and Neck Surgery
E-mail: kishi.hns@tmd.ac.jp

2. Course Description and Timetable:

Lecture

Goals/outline:

We mainly deal with head and neck tumours. Lectures are focused on the clinical characteristics and pathogenesis of these head and neck tumours. Furthermore, various treatments strategies for these tumours are shown.

Available programmes:

Lecture:	as needed
Special Lecture:	as needed
Seminar:	monthly, as needed
Journal Club:	every Tuesday, 8:20–9:00

Practice

Goals/Outline:

There are three goals:

- First, to master the diagnostic techniques for head and neck tumours, by means of physical and endoscopic examinations.
- Second, to understand the findings of imaging utilities, such as X-ray, CT, MRI and US.
- Third, to properly select the appropriate treatments for head and neck tumours in consideration of function and appearance.

Available programmes:

Conferences:

Outpatients with head and neck tumours: every Thursday 17:30–18:30
Inpatients with head and neck tumours (joint with plastic surgeon and neurosurgeon, as needed): every Tuesday 18:30–20:00
The patients who receive radiation therapy (joint with radiologists): biweekly Thursday 18:00–18:30
Ward rounds: every Tuesday 9:00–11:00

Lab

Goals/Outline:

(1) Anatomy of the skull base.
(2) Development of new surgical techniques in cancer treatment.
(3) Clinical application of new devices in endoscopic examination.
(4) Surgical treatment of paediatric head and neck tumours.

Available programme:

Participation in each study group: as needed

3. Format:

The format comprises a small number of students.

4. Venue:

Depend on the programme.

5. Grading:

The evaluation of results is based on contents of reports, presentations at conference and original articles.

Diagnostic Radiology and Oncology

Lecture (Code:7031, 1styear:6units)
Practice (Code:7032, 2ndyear:4units)
Lab (Code:7033, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Shibuya H, e-mail: sby.mrad@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/Outline

Postgraduate courses are made to study basic/clinical radiation medicine (radiation biology, radiation physics, diagnostic radiology, nuclear medicine and radiation oncology) to become specialist in diagnostic radiology and oncology

Available programs:

Lecture: radiation biology and physics
Special Lecture: on occasion
Seminar: on occasion
Journal club: Wednesday morning
Conference: Wednesday morning

Practice

Goals/Outline:

Students of our section are expected to obtain a doctorate degree By presenting thesis

Available programs:

Clinical conference in the area of radiation biology, diagnostic radiology and radiation oncology

Lab

Goals/Outline:

Available program: Particepation in a research group

Maxillofacial Anatomy

Lecture (Code:8211, 1st-year : 6 units)
Practice (Code:8212, 1st-～2nd-year: 4 units)
Lab (Code:8213, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Shunichi Shibata Associate Professor: Tatsuo Terashima
Reserch Associate: Shun-ichi Shikano, Part-time Lecturer: Rei Sato
Contact person: Shunichi Shibata E-mail sshibata.mfa@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

To obtain the ability of appreciating various biological reactions morphologically, lecturers explain the function of various oral organs from the viewpoints of morphology. Further, lecturers explain their structural features using light and electron microscopy.

Available programs:

Lecture Wednesday (second term) 13:00:15-00

Special Lecture as required

Seminar (1) Thursday 9:30-11:00 or 10:30-12:00

Practice

Goals/Outline:

Learn how to make samples for histological observations, execute practical procedures, and observe samples practically. Next, investigate references related to findings obtained and make a discussion, then present their data.

Available programs:

Seminar (2) as required

Lab

Goals/Outline:

Plan experimental system to investigate development, growth, and regeneration of oral tissues (tooth germ, periodontal tissues, jaw bone etc.), the execute it. To evaluate results, various techniques including making histological sections, staining, and taking pictures should be mastered.

Available program:

Seminar (3) as required

3. Format:

Depended on programs and lecturers, make sure it before taking a course.

4. Venue:

Maxillofacial Anatomy (6th floor, in MD tower)

5. Grading:

Evaluate is based on attendance for lecture and practice, and contents of studies.

6. Notes:

Correspond to contact person before you take a course.

Cognitive Neurobiology

Lecture (Code:8221, 1st-year : 6 units)
Practice (Code:8222, 1st-～2nd-year: 4 units)
Lab (Code:8223, 2nd-～3rd-year: 8 units)

1. Instructors:

Masato Taira	Professor	E-mail	masato.cnb@tmd.ac.jp
Hisayuki Ojima,	Junior Associate Professor	E-mail	yojima.cnb@tmd.ac.jp
Narumi Katsuyama*	Assistant Professor	E-mail	katz.cnb@tmd.ac.jp

*: Contact person

2. Course Description and Timetable

Lecture

Goals/outline:

To understand higher brain functions, the functional magnetic resonance imaging (fMRI) and electrophysiological techniques are lectured.

Available programs:

Lecture: 2nd semester, Friday, 17:30-19:00

Special Lecture: not fixed

Journal Club: every Monday, 18:00-19:00

Practice

Goals/Outline:

The final goal is to learn scientific knowledge and techniques necessary for research that has been conducted in this laboratory to understand the higher brain functions.

Available programs:

There are several on-going research programs. Applicant will choose one/some in consultation with instructors.

Lab

Goals/Outline:

Research programs aim at understanding higher brain functions and include psychophysical and fMRI experiments with humans, and electrophysiological recordings and behavioral analyses of non-human primates and rodents under training.

Available program:

There are several research programs. Applicants will choose one/some in consultation with us.

3. Format:

In a small group.

4. Venue:

Room varies from lecture to lecture. Please contact the adequate instructor (*) in advance.

5. Grading:

Evaluation is made based on the attendance rate, the contents of discussion, and reports submitted.

6. Notes:

Attendees' scientific interests will be respected as much as possible and incorporated in lectures.

Molecular Craniofacial Embryology

Lecture (Code:8231, 1st-year : 6 units)
Practice (Code:8232, 1st-～2nd-year: 4 units)
Lab (Code:8233, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor Sachiko Iseki, Associate professor: Masaaki Ikeda
Part-time lecturers: Shigeru Okuhara, Shumpei Yamada, Hirofumi Doi
Contact person: Sachiko Iseki E-mail: s.iseki.emb@tmd.ac.jp

2. Course Description and Timetable:

Lecture

Goals/Outlines: To provide students with understanding the basics of molecular mechanisms of craniofacial morphogenesis, including craniofacial malformations associated with gene mutations.
Available programs:

Lecture	Thursday between May and July
Special Lecture	2 times per year
Journal Club	TBA Please contact the instructor

Practice

Goals/Outlines: Instructors and lab members present "Research Progress" including basic methods of experimental developmental biology and recent genetic engineering techniques to study molecular mechanisms of craniofacial morphogenesis as well as craniofacial malformations associated with gene mutations.
Available programs:

Research Progress	TBA Please contact the instructor

Lab

Goals/Outlines: Laboratory works are carried out to understand molecular mechanisms of craniofacial morphogenesis by using basic and advanced methods of histology, molecular biology and recent genetic engineering techniques. Our current focuses are: midface development, skull bone development and regeneration, tooth root formation.
Available programs:

Participation in a research group

3. Format:

Lectures and practices are held to a group of small number of students. Since laboratory works are carried out individually, it is advised to contact each instructor about the detail.

4. Venue:

Venue depends on each program, students are requested to contact the instructors for each program.

5. Grading:

Evaluation is made based on the attendance to the lectures and on the research reports and/or presentation during the course.

6. Notes:

Cellular Physiological Chemistry

Lecture (Code:8241, 1st-year : 6 units)
Practice (Code:8242, 1st-～2nd-year: 4 units)
Lab (Code:8243, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor Ikuo Morita,
Associate Professor Kenichi Nakahama, Assistant Professor Kotaro Kato,
Part time Lecturer Hiroshi Fujita, Takako Nagatani, Mayumi Abe
Contract Lecturer Safronova Olga, Contract Assistant Professor Masako Akiyama
Contact person: Ikuo Morita E-mail morita.cell@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goal/outline:

To understand the characteristics of cells and to regulate their function are indispensable to think about the mechanisms of disease onset and the treatment. In the lecture, we will focus on the diseases related with arteriosclerosis, cancer and osteoporosis from which large numbers of patients are suffering, explain the possibility of the recovery by the interventions and introduce advanced knowledge on tissue engineering in this field.

Available programs:

Lecture	Every Monday after September	9:30-12:00
Special lecture	Occasional	
Seminar	Occasional	
Journal Club	Every Tuesday	9.30-10.00

Practice

Goals/Outline

Students learn cell biological and molecular biological methods required for the practice of scientific researches. The techniques using with animal models are also included.

Available program

Research conference	Every Tuesday	17.00-18.00
Group meeting (Regeneration)	Every Monday	17:00-18:00
Group meeting (Gap Junction)	Every Friday	17:00-18:00

Lab

Goals/Outline:

The analysis of the cause of diseases and the action points of drugs mainly using with cell culture systems is one of the main goals after learning how to isolate and culture cells from animal tissues. Students can learn how to practice laboratory works including the planning of experiments, making notes, practicing investigations and the publication of the results.

Available program

Participation in lab works	any time

3. Format

Holding seminars for small group or individuals to motivate the participants.

4. Venue:

Ask laboratory member in charge. Lecture room can be changeable.

5. Grading

Overall judgment will be given according to the content of the research and the participation in the lecturers, practices and lab works.

6. Notes

The general language in Research conference is English.

Contact Professor Morita for further details

Metals

Lecture (Code:8251, 1st-year : 6 units)
Practice (Code:8252, 1st-～2nd-year: 4 units)
Lab (Code:8253, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor Takao Hanawa Associate Professor Yusuke Tsutsumi
Assistant professor Hisashi Doi Part-time lecturer Takayuki Yoneyama
Contact person: Takao Hanawa TEL: 5280-8006 E-mail: hanawa.met@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Metallic biomaterials are currently used for re-constitution of bio-functions in tissues and organs in the human body because of their high strength and fracture toughness. Over 80% implants consist of metals and its importance is increasing in medicine. We provide the basic knowledge of metals such as mechanical properties, corrosion resistance, and bio-safety in the lectures.

Available programs:

Lecture Every Monday from 14:00 to 17:00 (May 13 ～ Jun 10)

Practice

Goals/Outline:

In order to understand metallic biomaterials further, coarse considering problems of metallic biomaterials such as ion dissolution of metals, fatigue, corrosion-fatigue, wear and so on, will be conducted if necessary. Biocompatibility of metals is also discussed with the recent literatures.

Available programs:

Semminar Every Monday from 18:00 to 19:00

Lab

Goals/Outline:

In order to study mechanical properties of metallic biomaterials, tensile, hardness, fatigue and friction tests will be carried out. The chemical properties will be also examined by ion dissolution and corrosion tests.

Available program:

To be announced if necessary

3. Format:

All courses are carried out in a small group with discussion according to PBL method.

4. Venue:

Conference room 1 (3F), Institute of Biomaterials and Bioengineering

5. Grading:

Grade point is evaluated from reports in the lecture, practice and lab and their attendance.

6. Notes:

Inquiry and questions on the metallic biomaterials are welcomed at all hours.
(hanawa.met@tmd.ac.jp, tsutsumi.met@tmd.ac.jp, doi.met@tmd.ac.jp)

Biodesign

Lecture (Code:8261, 1st-year : 6 units)
Practice (Code:8262, 1st-～2nd-year: 4 units)
Lab (Code:8263, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Kazuo TAKAKUDA Assistant Professor: Wei WANG
Inquiry: Kazuo TAKAKUDA E-mail: takakuda.mech@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

In the first year through special lectures the basic knowledge of biomechanics will be introduced as well as its experimental methods. Students would learn how to analysis mechanical problems in living body. In the second year through routine seminars students would keep up with the most recent status of related study areas.

Available programs:

Lecture on biomaterial mechanics: on Thursday for 8 times in the first semester, from 10:00 to 12:00.

Journal Club on biomechanical engineering: on every Wednesday, from 11:00 to 12:00.

Practice

Goals/Outline:

Students would learn and practice the mathematical operations in mechanical analysis of living tissues and biomaterials as well as the computer simulation techniques.

Available programs:

Practice of methods in biomaterial mechanics research: on every Tuesday, from 13:00 to 15:00.

Lab

Goals/Outline:

Students would learn and practice mechanical characterization of living tissues and biomaterials.

Available program:

Biomechanical experiments: time as needed.

3. Format:

Discussion in small group

4. Venue:

Shifts with contents, inquiry needed before attending.

5. Grading:

Comprehensive assessment based on attendance and achievements.

6. Notes:

Limit on attenders: 10 persons for lectures and 5 persons for practices and experiments.

Maxillofacial Surgery

Lecture (Code: 8271, 1st-year: 6 units)
Practice (Code: 8272, 1st~2nd-years : 4 units)
Lab (Code: 8273, 2nd~3rd-years: 8 units)

1. Instructors:

Professor: Kiyoshi Harada, Junior Associate Professor: Satoshi Yamaguchi, Narikazu Uzawa
Assistant Professor: Yutaka Sato, Noriyuki Yoshitake, Yasuyuki Michi, Kazuto Kurohara, Kouichi Nakakuki, Yoshio Oyama

Contact person: Kiyoshi Harada TEL 5803-5498 E-mail haradak.mfs@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

This lecture focused on diagnosis, treatment and prevention of congenital and acquired disease in the oral and maxillofacial region. In addition, you can study about recent diagnosis and treatment strategies of this field.

Available programs:

Lecture	At any time
Special Lecture	At any time
Seminar for graduate students	At any time
Journal Club	Friday 17:30~18:30

Practice

Goals/Outline:

Goals of this practice are to understand the etiology, diagnosis, choice of examination, laboratory data, and choice of optimum treatment for the diseases in the oral and maxillofacial region including Cleft Lip and palate, Facial Deformity and Oral and Maxillofacial tumor, and so on. Moreover, you can increase the knowledge about surgery using biomaterials and surgical reconstruction with anastomosis technique.

Available programs:

Conference for new patients	Monday & Wednesday 16:30～17:30
Ward rounds	Friday 13:30~15:00
Preoperative Conference	Friday 15:00~16:00
Facial Deformity Clinic・Conference	Every other week Monday 13:00～15:00・Friday 15:00~16:00
Cleft Lip & Palate Clinic・Conference	Wednesday 13:00~16:00・The third week Friday 15:00～16:00
Tumor Clinic・Conference	Monday 13:00～16:00 Friday 10:00~12:00・Every other week Friday 13:30～14:00

Lab

Goals/Outline:

Goals of these Labs are to learn the methods for study planning, study performing, evaluation methods, conference presentation and thesis writing.

Available program:

1. Clinical study of the Facial deformity and CLP
2. Basic study of the bone regeneration
3. Basic and clinical study of the TMJ disorders.
4. Basic and clinical study of the oral tumors
5. Genetic diagnosis and treatment of the oral cancers

3. Format:

In principle, small group system is applied. And independency of the participants is respected.

4. Venue:

Each lecture is given in the different venue. Please ask the instructor and confirm the location of the venue.

1) Ward rounds: 8F Ward in Dental Hospital
2) Preoperative Conference: 9F Conference Room
3) CLP Clinic: 6F
4) FD Conference, Tumor Clinic: 6F
5) Seminar for Graduate students, Special lecture, Journal Club: at any time.

5. Grading:

General evaluation is based on the attendance situation for the above-mentioned lectures, practices, and labs. Study content is also a subject for the estimation.

Maxillofacial Orthognathics

Lecture (Code:8281, 1st-year : 6 units)
Practice (Code:8282, 1st-～2nd-year: 4 units)
Lab (Code:8283, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor Keiji Moriyama Associate Professor Shoichi Suzuki
Junior Associate Professor Tatsuo Kawamoto Takuya Ogawa
Assistant Professor Michiko Tsuji Norihisa Higashihori Jun Miyamoto
Hiroki Fukuoka Yukiho Kobayashi
Contact person: Shoichi Suzuki E-mail s-suzuki.mort@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/Outline:

The goal of the program of Maxillofacial Orthognathics is to provide information related to craniofacial growth and development, and stomatognathic function in order to develop basic knowledge and skills for the treatment of the patients with a wide variety of malocclusions. It also provides valuable information of diagnosis, and treatment planning, for orthodontic and orthognathic therapies of the patients with jaw deformities and congenital craniofacial anomalies.

Available program:

Lecture	Schedule will be informed by instructors.
Special Lecture	Schedule will be informed by instructors.
Seminar	17:00~19:00 - Fridays

Practice

Goals/Outline:

Comprehensive care by a team of specialists including maxillofacial surgeons, orthodontists, prosthodontists, speech therapists etc. is needed for the treatment of the patients with cleft lip and palate and other craniofacial anomalies. The Graduate Program provides the clinical education of orthodontics as a part of the multi-disciplinary approach for such patients.

Available programs:

Clinical meetings	Schedule will be informed by instructors.
Research seminar	Schedule will be informed by instructors.
Professor diagnosis	Tuesdays and Fridays
FD conferences	15:00~16:00 - every other Friday
CLP conferences	15:00~16:00 - fourth Friday

Lab

Goals/Outline:

The laboratory research course provides education on basic and clinical sciences of craniofacial growth and development, such as molecular biology and molecular genetics of congenital anomalies. It also includes clinical and epidemiological studies on a wide variety of malocclusion and orthodontic treatment.

Available programs:

Participation in research group voluntary

3. **Format:** a small group

4. **Venue:** Information will be provided from the instructor beforehand.

5. **Grading:**

Grading will be performed based on achievement of the study, as well as a record of attendance to lectures, clinical practice and laboratory research.

Maxillofacial Prosthetics

Lecture (Code:8291, 1st-year : 6 units)
Practice (Code:8292, 1st-～2nd-year: 4 units)
Lab (Code:8293, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor Hisashi Taniguchi. Junior Associate professor Yuka Sumita,
Assistant professor Tosiaki Iida, Mariko Hattori
Contact person:Yuka Sumita Junior Associate Professor E-mail yuka.mfp@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The main objective of this course is to provide students with opportunity to gain sound understanding of the restoration of functional and esthetic disorders of oral and/or maxillofacial areas that are caused by congenital developmental or acquired diseases by means of the high-advanced dental and medical cares.

Available programs:

Lecture:
16:00~17:00
every Tuesday of May-July at room of Maxillofacial prosththeticss 2nd floor of research and educational Building (10thbuilding)

Special Lecture:
Contact us by e-mail.

Seminar:
17:00~18:00
every Wednesday at 2nd floor Maxillofacial prostthetics department room of research and educational Building

Practice

Goals/Outline:

In order to master the treatment planning and the prosthetics diagnosis for the maxillofacial patients, join the clinical work at 6F clinic room of dental hospital building, Yushima Campus.

Available programs:

Professor's diagnosis :
9:00~10:30 every Wednesday at 6F clinic room of dental hospital building, Yushima Campus.

CLP conference:
15:00~16:00 4th Friday

Lab

Goals/Outline:

Our department is the special unit for the prosthetics treatment for patients with congenital or acquired defects in head and neck regions. The main goal of the research is to establish a novel theory and feedback it to the clinic to improve the quality of life of each patient. In this respect, we are focusing on several projects as follows.

1. Diagnosis for functional and esthetic disorders of oral and/or maxillofacial areas that are caused by congenital developmental or acquired diseases.
2. Modal analysis for human living dentition.
3. Acoustic analysis for speech and voice utterances
4. Medial dental art.

Available program:

Contact us

3. Format:

Every candidate has to address their own opinipn freely to the others.

4. Venue:

Lecture: room of Maxillofacial prosthodontics 2nd floor of research and educational Building
Practice and Lab: room of clinic for maxillofacial prosthetics 6th floor of dental hospital building

5. Grading:

Comprehensive assessment is done including attendance if lecture, practice and labo-work.

6. Notes:

If necessary, please contact us by e-mail.

Cell Biology

Lecture (Code:7041, 1styear:6units)
Practice (Code:7042, 2ndyear:4units)
Lab (Code:7043, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Akihiro Inoue E-mail inoue.cbio@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Principles and techniques of cell biology will be reviewed from historical point of view. Emphases are made on the fine structure of the cells and the power of microscopy.

Available programs:

Special Lecture Fine Structure of the Cells

Seminar Cell Biology Seminar
Journal Club Cell Biology Journal Club (Every Monday PM3:00)

Practice

Goals/Outline

Participants will learn how to design experiments and evaluate the results under the supervision of our staffs, using the data of on-going projects in our lab.

Available programs:

Practice of Cell Biology

Lab

Goals/Outline:

Basic cell biology techniques will be presented including cell culture, transfection, and light-microscopy

Available program:

Cell Biology Lab

3. Format:

Small group (less than 5 participants)

4. Venue:

Cell biology laboratory (18F M&D tower)

5. Grading:

Students will be graded by their participation

6. Notes:

The language used in lectures will be English

Medical Biochemistry

Lecture (Code:7051, 1styear:6units)
Practice (Code:7052, 2ndyear:4units)
Lab (Code:7053, 2nd-～3rdyear: 8 units)

1. Instructors:

Yutaka Hata (Full professor) and three assistant professors.

Contact person: Yutaka Hata E-mail yuhammch@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

We are studying a new signaling pathway and its related proteins (Hippo pathway and RASSF), which are involved in the regulation of cell proliferation, cell polarity, and apoptosis. This pathway and proteins are well conserved from fly to human. The mutations of some components lead to oncogenesis and organ malformation. Several recent studies suggest that Hippo pathway and RASSF are implicated in inflammation and cell differentiation such as adipogenesis, osteogenesis, and keratinocyte differentiation. They play important roles in not only caner but also other diseases and could be new therapeutic targets. We give lectures about our current studies and provide graduate students with the opportunity to participate in them. To learn more about our research, please visit our Web page (http://www.tmd.ac.jp/english/mbc/index.html).

Available programs:

Lecture To be announced when scheduled.

Special Lecture To be announced when scheduled.

Seminar To be announced when scheduled.

Journal Club Saturday morning.

Conference To be announced when scheduled.

Practice

Goals/Outline:

To gain a wide knowledge of cancer biology and epigenetic changes underlying various human diseases through the study on Hippo pathway and RASSF.

Available programs:

Weekly progress report. Friday evening or Saturday morning.

Lab

Goals/Outline:

To perform biochemical, molecular biological, and cell biological experiments to study Hippo pathway and RASSF.

Available program:

Participation in our research.

3. Format:

Please consult the contact person.

4. Venue:

To be announced when scheduled.

5. Grading:

Please consult the contact person.

Department of Joint Surgery and Sports Medicine

Lecture (Code:7061, 1styear:6units)
Practice (Code:7062, 2ndyear:4units)
Lab (Code:7063, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor Takeshi MUNETA
Contact person: Hideyuki Koga E-mail koga.orj@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Bone and joint system which support living body consists of bone, cartilage, tendon, ligament, and muscle tissues. These tissues with these own characteristic maintain function from an early development to death. These tissues go through the distinctive process of degeneration and healing against diminished ability to maintain function and injury. Clarification of the background of these degeneration, prevention of these degeneration, treatment procedure, and promotion and control of the healing are studied.

Available programs:

Lecture As needed

Special Lecture As needed

Seminar As needed

Journal Club Every Thursday 7:30-8:30
Every Friday 7:30-8:30

Practice

Goals/Outline:

The pathology and problems of the representative disease and injuries of bone, cartilage, tendon, ligament, and muscle tissues are studied, and diagnostic technique by physical examination, image studies, and pathology will be acquired. Diagnostic methods, examination procedures, and treatment procedure for bone and joint disease and injuries will be acquired, and therapeutic strategy and practice against bone and joint disease and injuries are studied.

Available programs:

Conference at the hospital ward: every Monday 7:35-8:45
every Monday 16:30-17:30
Ward round: every Monday 14:30-16:00
every Monday 17:00-17:30
Research progress: every Tuesday 7:30-8:30

Lab

Goals/Outline:

Following studies have been extensively carried out in out laboratory with various biological and molecular biological techniques:

- Establishment of separation and proliferation of mesenchymal stem cells
- Elucidation of biological properties of mesenchymal stem cells
- Development of treatment of joint cartilage injury using mesenchymal stem cells
- Mechanism and treatment of joint pain
- Development of knee and hip arthroplasty which accommodates Japanese
- Promotion of anatomical knee anterior cruciate ligament reconstruction

Available program:

Participation in a research group: As needed

3. Format:

Small group lectures are performed. Round of talks for reports and discussions on research are held as many as possible.

4. Venue:

Venues are different according to the program.

5. Grading:

Grading are performed in a comprehensive way based on the lecture, practice, and laboratory participation situation, reports about research, and conference presentations.

Biostructural Science

Lecture (Code:8301, 1st-year : 6 units)
Practice (Code:8302, 1st-～2nd-year: 4 units)
Lab (Code:8303, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor Yoshiro Takano, Associate Professor Makoto Tabata, Assistant Professor Otto Baba
Contact person: Yoshiro Takano E-mail takanoy.bss@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Introduce structural features and organization of bones, teeth and other biological mineralized tissues at both macroscopic and microscopic levels, and elaborate of detailed mechanisms of formation, destruction, and remodeling of these intriguing tissues. Basic mechanisms of biological mineralization and its diversity among various cells, tissues and species of animals are also referred to.

Available programs:

Weekly Lectures for Graduate Students Oct 29 – December 17 (Tuesday 17:00-18:30)

Special Lecture occasional

Seminar occasional

Journal Club Thursday 10:30 – 11:30

Conference occasional

Practice

Goals/Outline:

Using available data and published materials, review and evaluate the experimental strategies used in the respective studies and, through group discussions, understand the importance of the choice of proper method and its application.

Available programs:

Power Lunch program combined with Journal Club

Lab

Goals/Outline:

Experience various methods of animal and/or human tissue processing and learn basic methods of microscopy and histo- cytochemistry combined with molecular biology, essential for understanding structure and function of cells, tissues and organs.

Available program:

Practical course program will be designed for the individual graduate students measuring Biostructural Science.

Graduate students may also be involved in one or more of the ongoing research projects.

3. Format:

Generally, three expert tutors will be assigned to one graduate student and give necessary advice from the 1st year of the 4 - year - course.

4. Venue:

Lecture: Seminar room in M & D Tower (Room number needs to be confirmed at the Students' Office)

Practice & Lab works: Biostructural Science Laboratory (8th floor, M & D Tower)

5. Grading:

Comprehensive evaluation based on attendance, attitude, and competence.

6. Notes:

Lecture and instructions will be provided in English on request.

Pharmacology

Lecture (Code:8311, 1st-year : 6 units)
Practice (Code:8312, 1st-～2nd-year: 4 units)
Lab (Code:8313, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Keiichi Ohya Associate Professor: Kazuhiro Aoki
Assistant Professor: Yukihiko Tamura
Contact person: Keiichi Ohya E-mail kohya.hpha@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Make lectures concerning the drugs that affect the formation and resorption process of hard tissues such as bone and teeth and also provide information about the necessary techniques for hard tissue research.

Available programs:

Lecture at any time

Special Lecture at any time

Seminar at any time

Journal Club Every Thursday, 17:00-18:00

Conference at any time

Practice

Goals/Outline:

Make lectures for every topic of the research theme, discuss with them by obtaining the related papers and the research results and know the points and the background of research. Final goal is to make research plan, do experiments, and summarize data by themselves.

Available programs:

Conference and journal club of each research group. At any time

Lab

Goals/Outline:

Join each research group and know the techniques for hard tissue research. Final goal is to ~~do~~ perform experiments using these techniques and to evaluate the research data.

Available program:

Join the research group. At any time

3. Format:

Make small number of member to perform research theme independently.

4. Venue:

Laboratory rooms for the pharmacology (M & D tower, 7th floor, south side)
Seminar and lecture rooms of M & D tower

5. Grading:

Evaluations are to count the attendance time and to know the progress of the student's ability for research.

6. Notes:

It is better to make brush-up both the ICT levels for document retrieval and the English conversation skill.

Connective Tissue Regeneration

Lecture (Code:8321, 1st-year : 6 units)
Practice (Code:8322, 1st-～2nd-year: 4 units)
Lab (Code:8323, 2nd-～3rd-year: 8 units)

1. Instructor:

Tamayuki Shinomura, Associate Professor
Contact person:T. Shinomura E-mail t.shinomura.trg@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Hard tissues including tooth, bone, and cartilage are characterized by the presence of abundant extracellular matrix, ECM. Therefore, to gain a better understanding of these tissues, it is essential for us to know the molecular background of ECM. The lecture will concentrate especially on the molecular properties of cartilage matrix and the regulation of their genes during cartilage tissue formation. In addition to ECM molecules, we will be focused on the transcription factors that control the chondrogenic differentiation and the expression of cartilage characteristic ECM molecules such as type II collagen and aggrecan. After gaining the understanding of molecular mechanisms underlying a cartilage tissue formation, we would like to discuss the challenges for the future in the field of hard tissues regeneration.

Available programs:

Lecture,	on an as-needed basis			
Special Lecture,	on an as-needed basis			
Journal Club (Extracellular Matrix),	Every Thursday	16：00	–	17：00
Journal Club (Cartilage),	Alternate Thursdays	8：00	–	8：30

Practice

Goals/Outline:

Based on the latest research developments of cartilage, specific and general discussions will be held to invent and to stimulate new research.

Available programs:

Progress Meeting, on an as-needed basis

Lab

Goals/Outline:

Students can acquire basic technology related to the regulation of gene expression using established chondrogenic cell lines.

Available program:

Participation in our research group, on an as-needed basis

3. Format:

In an intimate setting, we want to have frank discussions with students as much as possible.

4. Venue:

Since a venue depends on the program, please ask a contact person before taking part in the course.

5. Grading:

The participation rate in programs will weigh heavily in grade calculations. The comprehensive evaluation will be conducted based on the active participation in the programs.

Biochemistry

Lecture (Code:8331, 1st-year : 6 units)
Practice (Code:8332, 1st-～2nd-year: 4 units)
Lab (Code:8333, 2nd-～3rd-year: 8 units)

1. Instructors:

Miki Yokoyama, Associate Professor; Yasuhiro Kumei, Lecturer; Katarzyna Anna Podyma-Inoue, Assistant Professor;
Contact person: Miki Yokoyama E-mail m.yokoyama.bch@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The extracellular matrix functions as scaffold of body structures and as internal environment supporting cellular activities in multicellular organisms. The major goal of our section is to study molecular organization and pathophysiology of the extracellular matrices, especially those associated with skeletal tissues.

Available programs:

Lecture Announced elsewhere

Special Lecture Announced elsewhere

Seminar Announced elsewhere

Journal Club 16:00 – 17:00 on every Thursday

Laboratory meeting 11:00 – 12:00 on every Thursday

Text book Club 13:30 – 15:00 on every Thursday

Practice

Goals/Outline:

Biochemical analyses on the structure, biosynthesis, metabolic regulation and biological functions of extracellular matrix molecules

Available programs:

Laboratory meeting 11:00 – 12:00 on every Thursday

Lab

Goals/Outline:

Biochemical analyses on the structure, biosynthesis, metabolic regulation and biological functions of extracellular matrix molecules

Available program:

Upon request

3. Format:

Small group seminars

4. Venue:

To be announced

5. Grading:

Attendance to lectures, seminars, laboratory practices is evaluated.

6. Notes:

Personal consultation will be provided for interested students.

Cell Signaling

Lecture (Code:8341, 1st-year : 6 units)
Practice (Code:8342, 1st-～2nd-year: 4 units)
Lab (Code:8343, 2nd-～3rd-year: 8 units)

1. Instructors:

Associate Professor: Tomoki Nakashima
Adjunct Lecturers: Hiroshi Takayanagi (University of Tokyo), Shiro Ikegawa (Riken)
Contact person: Tomoki Nakashima E-mail naka.csi@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Students will learn the basis of the life science by understanding the fundamental mechanism of intracellular signal transduction that regulates a variety of cellular functions including cell survival, death, proliferation and differentiation. In addition, students will learn the molecular bases of disease therapies by understanding the abnormalities of intra- and/or intercellular signal transduction pathways underlying pathological conditions.

Available programs:

Lecture Friday 12:00 – 14:00 (at the seminar room on the 8th floor in the M&D tower)
Special Lecture To be announced

Practice

Goals/Outline:

Students will experience the experimental and analytical process of advanced science. Under the supervision of stuffs, students will join the analysis of data obtained from experiments. Our major research interests include:

1. Signal transduction mechanisms that regulate the differentiation of osteoclast, osteoblast and osteocyts important cell lineages that regulate bone remodeling.
2. Regulation of bone remodeling by molecules in the immune system.
3. Signal transduction in bone destructive diseases and development of clinical applications.

Available programs:

Progress conference To be announced

Lab

Goals/Outline:

Students will learn basic molecular biology and genetic engineering techniques by observing and/or performing biochemical experiments using cultured cells and knockout mice.

Available program:

Participation in study groups To be announced

3. Format:

Participatory class by a small group.

4. Venue:

Please contact the instructor in charge before the course.

5. Grading:

Attendance rate and presentation

6. Notes:

Limited number: none
Please contact the instructor in charge before the course.

Inorganic Materials

Lecture (Code:8351, 1st-year : 6 units)
Practice (Code:8352, 1st-～2nd-year: 4 units)
Lab (Code:8353, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Kimihiro YAMASHITA, Associate Professor: Miho NAKAMURA,
Assistant Professor: Naohiro HORIUCHI
Associate Professor: Akiko NAGAI, Assistant Professor: Kousuke NOZAKI (Material Biofunctions)
Contact person: Naohiro HORIUCHI E-mail nhori.bcr@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The objective and principle of the department of Inorganic Materials is to educate students with materials knowledge demanded to medical and dental doctors who are leading medical professionals and bioscientists who are capable of carrying out their own research at a international level in the area of their special fields of science, respectively. Bioceramics such as hydroxyapatite and tricalcium phosphate have been clinically applied for inorganic substitutions in orthopedic and dental field. Main objective of bioceramics in the graduate course is to provide students opportunity to study ceramic materials science such as structure and synthesis, and also study materials characterization technology. Students are also taught on investigation of osteoconductive mechanism by bioceramics. For deeper understanding, this lecture is to be undertaken with the professors of the department of Biomaterial Biofunctions.

Available programs:

Lecture	Monday
Special Lecture	A/N
Seminar	A/N
Journal Club	Friday
Conference	Thursday

Practice

Goals/Outline:

We have developed educational programs which enable students to acquire interdisciplinary and extensive material knowledge, while cultivating a research-oriented mindset. Students are tought to understand research trends and opinions on bioceramics.

Available programs:

Lab seminar: Friday (10:00-12:00)
Journal Club: Thursday (16:00-17:30)

Lab

Goals/Outline:

We have developed our existing curriculum significantly so that students can, through tutorials, acquire not only extensive material knowledge but also advanced research skills.

Available program:

Experiment (Synthesis of ceramic powder, making of ceramics and biological assessments): A/N

3. Format:

Small group

4. **Venue:**
   Department of Inorganic Materials, Institute of Biomaterials and Bioengineering
   http://www.tmd.ac.jp/i-mde/www/index.html

5. **Grading:**
   Assessment on the final examination or repot

6. **Notes:**
   We desire participation of highly-motivated students.

Periodontology

Lecture (Code:8361, 1st-year : 6 units)
Practice (Code:8362, 1st-～2nd-year: 4 units)
Lab (Code:8363, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Yuichi Izumi Associate Professor: Hisashi Watanabe Lecturer: Akira Aoki
Part-time Lecturer: Professor Matsuo Yamamoto, Associate Professor Toshiyuki Nagasawa
Contact person: Hisashi Watanabe E-mail watanabe.peri@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

To educate etiology of periodontal diseases, host response, oral bacteria, periodontal medicine, regenerative therapy and so on profoundly, and to find a solution through discussion research outcomes as to periodontal destructive process and periodontal treatment modalities

Available programs:

Lecture occasionally

Special Lecture occasionally

Seminar every other Tuesday 17:00~18:30

Clinical Conference Friday 16:30～17:30

Journal Club Friday 17:30～18：30

Practice

Goals/Outline:

To collect information as to current trend of periodontal research by literature and Internet in addition to discuss and investigate novel research approaches

Available programs:

Seminar occasionally

Lab

Goals/Outline:

To examine model animals and periodontal patients by the methods of microbiology, molecular biology, immunology and so on in order to elucidate etiology and pathology of periodontal diseases

Available program:

Participation in a research group occasionally

3. Format:

Small class and setting up discussion time as much as possible in order to promote mutual understanding

4. Venue:

Demonstration room of Hozon-Kyosei at 5th floor of Kousha-tou and several seminar rooms

5. Grading:

Grading will be performed by evaluating synthetically using attendance status to lecture, practice and lab and individual research contents

6. Notes:

Lecture will be given in English occasionally

Health Promotion

Lecture (Code:7071, 1styear:6units)
Practice (Code:7072, 2ndyear:4units)
Lab (Code:7073, 2nd~3rdyear: 8 units)

1. Instructors

Contact person: Professor, Takehito Takano E-mail secretary1.hlth@tmd.ac.jp

2. Course Description and Timetable

Lecture

Outline: Topics covered are overviews of major fields of public health; fundamental concepts of health promotion; associations of individual characteristics, and social, and environmental factors with people's health level; impact of urbanization and demographic change on these associations and public health; and frameworks to develop, implement and evaluate health promotion programs in communities. Opportunities to read and evaluate scientific journals, share interpretations of them, and to stimulate new ideas about various problems and issues in public health are arranged.

Available programs:

Regular Lecture	9:00-12:00, Tuesday & 14:00-16:00, Thursday
Special Lecture	To be announced
Seminar	9:00-12:00, Thursday

Practice

Outline: Leadership and managerial skills relevant to performing as an effective leader are explored through group discussions and individual tutorials. Quantitative and qualitative methods necessary in the assessment of health indicators, measurements of health determinants, examination and presentation of associations and trends, development of community profiles, and design and evaluation of health promotion programs are addressed though individual practicums. Technical visits to health promotion related sites and institutions are also arranged.

Available programs:

Academic presentation	9:00-12:00 Monday & 17:00-19:00 Friday
Professional writing	15:00-17:00 Friday
Analysis and computing	Monday-Friday
Technical visit	To be announced

Research

Outline: Opportunities of applying techniques to design, prepare, implement, analyze, and evaluate a health promotion program in actual settings are offered for interested and qualified students. Instructions on writing grant proposals, ethical consideration and procedures in public health research, and professional reporting skills are also provided.

Available programs:

Independent tutorial	Monday-Friday
Project meeting	10:00-12:00 Wednesday, and other times to be announced
Field study	By arrangement with individual faculty members

3. Format

Lectures, group discussions, and team project. English is used when the program is implemented jointly with international students in the Graduate Public Health Leader Course.

4. Venue

Lectures are held in lecture rooms. Auditoriums are used for special lectures. Venue for practices, labs and field studies should be confirmed with instructors.

5. Grading

Grades are based on participation at lectures, practices, labs and field studies; performances in the projects; and levels of attitude, skills and knowledge. Feedback based on competencies for public health professionals in the individual situations is provided.

6. Notes

The instruction provided through courses is based on individual interests and expertise.
URL: http://www.tmd.ac.jp/med/hlth/depHP/index.html
To attend the classes, permission of the instructors is required.

Environmental Parasitology

Lecture (Code:7081, 1styear:6units)
Practice (Code:7082, 2ndyear:4units)
Lab (Code:7083, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor Nobuo Ohta Associate Professor Nobuaki Akao Assistant Professor Takashi Kumagai & Takenori Seki
Contact person: Nobuo Ohta E-mail matata.vip@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Infectious diseases are most urgent health problem in the 21st Century on the background situations of recent rapid increases in tourism and trading, ecological changes, and/or social infrastructural development. Appearance of drug-resistant pathogens and liable human hosts to infectious diseases are additional important matters. Parasitic infections have unique features in infectious diseases because of the big impact of social culture and human behavior, and those factors make the disease control difficult. In the lecture, the unique host-parasite interactions will be introduced from the view points of in vitro and in vivo analyses, and ecology of parasites, molecular biology, immune responses of the infected hosts and others are also included in the lecture course.

Available programs:

Lecture Schedule will be annouced

Special Lecture Schedule will be annouced

Seminar Schedule will be annouced

Journal Club Wednesday morning

Conference Schedule will be annouced

Practice

Goals/Outline:

Diagnosis, pathogenesis and prognosis are covered by the use of clinical materials. Approaches are morphology, pathology, molecular biology and others. Philological practice is also covered.

Available programs:

Diagnosis of clinical materials: on the occasion
Field study: on the occasion
Journal club: Wednesday morning

Lab

Goals/Outline:

To understand host-parasite interactions, experimental pathological/immunological analyses of parasitic infections.

Available program:

Parasitological experiment: on the request
Infection experiments
Laboratory maintenance of parasite strains
Histopathology
Cell culture and immunological study
Methods for molecular study on parasites

3. Format:

Because of small class lecture and practice, prior contact is needed.

4. Venue:

Conference room and Laboratory of Environmental Parasitology (16th Floor, M & D Tower)

5. Grading:

Performance at Lecture, Practice and Lab, and presentations at scientific meetings are evaluated.

6. Notes:

Nothing particular.

Forensic Medicine

Lecture (Code:7091, 1styear:6units)
Practice (Code:7092, 2ndyear:4units)
Lab (Code:7093, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor Koichi UEMURA Junior Associate Professor Toshihiko AKI
Assistant Professor Takeshi FUNAKOSHI・Kana UNUMA

Contact person: Koichi UEMURA E-mail kuemura.legm@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

In both criminal and civil cases, students give a decision of the cause of death including murder cases, suicide cases and accidental cases and the intrinsic sudden death, composing of a large majority of unnatural death.
Students are also taught the form and contents of a written statement of expert opinion.

Available programs:

Lecture at any time

Special Lecture at any time

Seminar at any time

Journal Club at any time

Practice

Goals/Outline:

In forensic medicine, medical ethics and civil proceedings that includes medical malpractice, brain death and medical compensation, are taught. Furthermore, Students study about the criminology and situation of the injured or victim through autopsy assistance, making autopsy repot and examinations related to forensic autopsy.

Available programs:

Clinical Conference on Sunday or Monday irregularly
Observation of the judicial forensic autopsy on Sunday, Monday or Tuesday , irregularly

Lab

Goals/Outline:

Mechanism of toxic effects was examined using cultured cells and experimental animals. In accordance with the novel abused drugs by the changes of society and environment, the methods of detection and identification for toxic substances are tried and developed cooperating with clinical medicine.

Available program:

Participation in a research group at any time
Experimental Conference on Thursday

3. Format:

A small number of people

4. Venue:

Make sure of the venue to the instructor before lecture in each program.

5. Grading:

Participation and struggling in lecture, practice and examination are took into evaluation.

6. Notes:

Nothing

International Health and Medicine

Lecture (Code:7101, 1styear:6units)
Practice (Code:7102, 2ndyear:4units)
Lab (Code:7103, 2nd-～3rdyear: 8 units)

1. Instructors

Associate Professor Keiko NAKAMURA Junior Associate Professor Kaoruko SEINO
Contact person: Associate Professor Keiko NAKAMURA E-mail: nakamura.ith@tmd.ac.jp

2. Course Description and Timetable

Lecture

Outline: Rapid, global demographic and environmental changes are affecting the health and quality of life of people around the world. Academic endeavors to deepen understanding of the physical, social, and economic aspects of human-environmental interactions are fundamental to strengthen human security. Topics include overviews of major fields of international public health; human security; diverse regional issues from around the world; health equity; global environmental changes and health; health in cities; determinants of health; health promotion and education; family health; health systems around the world; field epidemiology; measuring individual and population health; evaluation of health programs; public-private partnership for health; and international health cooperation.

Available programs:

Lecture	14:00-16:00, Thursday
Special Lecture	To be announced
Seminar	9:00-12:00, Thursday

Practice

Outline: Individual practicums address the quantitative and qualitative methods necessary in the assessment of health and quality of life of population and environmental qualities at local, national, and international settings and address the evaluation of the effectiveness of health interventions and programs. Opportunities to advance academic skills of critical reading of original research work in public health, knowledge of ethics for public health research and its practical applications, and professional skills and attitudes required for international health leaders are provided.

Available programs:

Case study seminar	14:00-17:00, Monday

Research Training

Outline: Apply skills of designing, managing and implementing research plans into practical settings. Instructions on preparing ethical consideration and public health professional reporting are also provided

Available program:
Arranged for research project team members

3. Format

Lectures, group discussions, and team project. English is used in principle.

4. Venue

Differs from programs. Contact to instructors before attending programs.

5. Grading

Grades are based on participation at lectures, practices, and field studies; performances in the projects; and levels of attitude, skills and knowledge.

6. Notes

The instruction provided through courses is based on individual interests and expertise.
Intensive educational programs for working students are provided.
Collaborative programs with international organizations are prepared.
To attend the classes, in advance, permission from the instructors of the course is required.

Health Care Management and Planning

Lecture (Code:7111, 1styear:6units)
Practice (Code:7112, 2ndyear:4units)
Lab (Code:7113, 2nd-～3rdyear: 8 units)

1 . Instructors: Professor Kazuo Kawahara

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

2 . Course Description and Timetable

Lecture

Goals/outline:

By analyzing the Japanese healthcare policies and system and by reviewing their interaction with society, the structural characteristics and issues can be clarified. To resolve or find better ways to handle these issues, we conduct research into public health and welfare, and its related disciplinary areas. With the cooperation of active policy makers and personnel from the healthcare departments, the research results can be applied to the present healthcare policies and system. Through this education on collecting data, clarifying issues, analyzing the situation, and evaluating options, students taking this course are expected to grow in their ability to make healthcare policies.

Available programs: Lecture and Conference
Lecture and Conference 18:00-19:30 Monday
Special Lecture as occasion demands
Seminar as occasion demands

Practice

Goals/Outline:

We analyze and discuss the health and welfare policies proposed by the government based on the health statistic data and socio-economic indicators. The goals and objectives of us are to acquire the planning and evaluation skills etc. through these process.

Available programs: Seminar(1)
Practice and Conference 20:00-21:00 Monday

Lab

Goals/Outline:

To discuss the problems in studies which handling by each student can appear us the best way to carry out the studies. The students present the contents of their studies in terns and focusing the problems in their studies. These processes shows the students for the best way to develop their studies.

Available program: Seminar(2)
Presentation and Conference 21:00-22:30 Monday

3 . Format:

To introduce the domestic and foreign documents and papers about the latest health and welfare policies. And to analize, discuss and evaluate these contents.

4 . Venue:

MD Tower 16 F Graduate student lounge of Health Care Management and Planning Division or at the conference room on same floor.

5 . Grading:

PhD candidates are evaluated by the aggressiveness to the research subjects and the participation to the lecture and practice. In addition to this, the presentation number of times in the academic meetings.

6 . Notes:

Not particular

Molecular Epidemiology

Lecture (Code:7121, 1styear:6units)
Practice (Code:7122, 2ndyear:4units)
Lab (Code:7123, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Masaaki Muramatsu E-mail muramatsu.epi@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

To understand genetic and environmental risk factors of common metabolic diseases such as hypertension, diabetes, metabolic syndrome, and atherosclerosis by employing human genomic approach to epidemiology. Gene-environment interaction and epigenetic changes, such as developmental origins of health and disease(DOHaD),that underlie these diseases will also be studied.

Available programs:

Lecture as-needed basis

Special Lecture as-needed basis

Seminar・Journal Club Every Wednesday morning 10 AM to 12AM

Practice

Goals/Outline:

To learn methods for genomic and statistical analysis by relevant computer software using template and actual data-sets,

Available programs:

genetic & statistical analysis course

Lab

Goals/Outline:

To learn how to genotype variations such as SNPs and repeat polymorphisms in the human genome.
To learn how to analyze epigenetic changes, such as DNA methylation and histon modification.

Available program:

Lab works will be taught through attending to the internal projects.

3. Format:

Lectures will be done in a small group (up to 10 person). Practice and lab will be taught in a one-on-one manner.

4. Venue:

Conference room of Molecular Epidemiology at 2nd Floor of Medical Research Institute building (Surugadai-campus)

5. Grading:

Grading will be done by the attendance and the presentation at the lab meeting.

Research Development

Lecture (Code:7131, 1styear:6units)
Practice (Code:7132, 2ndyear:4units)
Lab (Code:7133, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Professor, Kozo Takase E-mail: ktakase.rdev@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The goals supposed in the lecture are mastering the technique of implementation of research development and acquiring the ability of management of projects.

Available programs:

Lecture 19:00-21:00, every Thursday

Special Lecture as-needed

Seminar as-needed

Practice

Goals/Outline:

The aim in the practical program is developing the performance of implementation and management of projects.

Available programs:

Practical Conference 19:00-21:00, every Tuesday

Lab

Goals/Outline:

Available program:

3. Notes:

Candidates are supposed to be completed "Master of Medical Administration" course, Tokyo Medical and Dental University.

Health Policy and Informatics

Lecture (Code:7141, 1styear:6units)
Practice (Code:7142, 2ndyear:4units)
Lab (Code:7143, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Kiyohide Fushimi E-mail kfushimi.hci@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Methodology and application of data handling, data analysis, database management for health data and administrative data from hospitals and the government will be lectured. In addition, basics and application of patient case-mix system and DPC system will be lectured.

Available programs:

Lecture to be announced

Special Lecture to be announced

Seminar to be announced

Journal Club to be announced

Conference to be announced

Practice

Goals/Outline:

Practices of data analysis for large-scale health care data bases will be available

Available programs:

Research conference 19:00 - 21:00 on Fridays

Lab

Goals/Outline:

Data analysis using SQL and OPAP database

Available program:

to be announced

3. Format:

lecture and small group discussion

4. Venue:

Research unit of Health Care Informatics Section

5. Grading:

reports, conference presentation, etc.

6. Notes:

none

Life Sciences and Bioethics

Lecture (Code:7151, 1styear:6units)
Practice (Code:7152, 2ndyear:4units)
Lab (Code:7153, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Masayuki Yoshida, Professor E-mail masa.bec@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

To learn the importance of ethical consideration based on specific study of three distinct area of the field; Medical Ethics, Research Ethics, and Bioethics.

Available programs:

Lecture to be announced

Special Lecture to be announced

Seminar to be announced

Practice

Goals/Outline:

To plan a research project with careful survey of background and previous observation. It is also important to learn a statistics required for medical research.

Available programs:

Journal Club to be announced

Lab

Goals/Outline:

It is necessary to directly conduct such a medical study with either basic or clinical research theme.

3. Format:

Our course will be consisted from no more than 5-6 students. It is highly recommended to actively participate in the debate and discussion.

4. Venue:

To be announced

5. Grading:

Grading will be considered based on the participation and its outcome to Lectures, Practices, and Lab works.

6. Notes:

Not in particular.

Health Care Economics

Lecture (Code:8381, 1st-year : 6 units)
Practice (Code:8382, 1st-～2nd-year: 4 units)
Lab (Code:8383, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Koichi Kawabuchi, Assistant Professor: Isao Igarashi
Part-time Lecturers: Shigeru Sugihara, Tomohiko Inui, Yukiko Ito
Contact person: Isao Igarashi E-mail igarashi.hce@tmd.ac.jp

2. Course Description and Timetable

Lecture/Practice

Goals/outline:

Understanding the methods of research on phenomena in health care field through economics point of view

Emphasis will be placed this academic year on how to approach the addressed phenomena, proceed with the research, and to write papers on researches (especially empirical research) in economics and other social sciences

Available programs:

Lecture/ Seminar Thursdays 18:00-20:00

Lab

Goals/Outline:

Obtain health care economics points of view and master its research methods based on individual themes, and proceed to practice writing papers that will be accepted to academic journals

Available program:

Independent study (time and settings are open to choice, but need to be discussed and approved)

3. Format:

Study of the following through lectures and research on specific case

- Research plan (Framework, Literature review, Strategies)
- Research design (Introduction, Purpose, Research questions and hypotheses, Use of theory, Terms and definitions, Research limitations and significance, Quantitative research)
- Paper structure (Title, Abstract, Introduction, Methods, Results, Discussion, References)
- Logistic thinking
- Others

4. Venue:

Office of Health Care Economics

5. Grading:

Based on overall achievement including attendance, contribution to the class, and reports

6. Notes:

References:

- J.W. Creswell "Research design: Qualitative, quantitative, and mixed method approaches" 2nd ed., Sage, 2003. (Translation in Japanese also available)
- S. Folland, A.C. Goodman, M. Statno "The Economics of Health and Health Care" Prentice Hall.
- J.M. Wooldridge "Introductory Econometrics; A Modern Approach" South-Western Pub.

Other information:

Plans to schedule intensive lectures by part-time lectures on microeconomics and health care economics as applied microeconomics

Audits are welcome

Dental Education Development

Lecture (Code:8391, 1st-year : 6 units)
Practice (Code:8392, 1st-～2nd-year: 4 units)
Lab (Code:8393, 2nd-～3rd-year: 8 units)

1. Instructors:

Ikuko MORIO (Professor), Jun TSURUTA (Junior Associate Professor)
Contact person: Ikuko MORIO E-mail: imorio.edev@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/Outline:

To understand the educational contents and the learning strategies required for fostering health care professionals who are capable of comprehensive patient care, team approach, and community-based care. The course will cover health care professional education ranging from the undergraduate level to life-long learning, focusing on integration of medicine and dentistry.

Available programs:

Lecture Friday 15:00-17:00 (starting in October)
*Please check with the instructor on the dates by email beforehand.

Practice

Goals/Outline:

To experience the process of curriculum planning: to grasp needs/demands; to set educational goals/objectives; to select and evaluate learning strategies and evaluation methods.

Available programs:

Lecture/practice Friday 15:00-17:00 (starting in October)
*Please check with the instructor on the dates by email beforehand.

Lab

Goals/Outline:

To find issues surrounding dental workforce education, collect appropriate data, sort them out and discuss possible solutions based on the results of analysis.

Available program:

All the research activities within the section

3. Format:

Combination of lectures and practice in small groups

4. Venue:

Seminar Room of Dental Education Development (M&D Tower 7F north-side)

5. Grading:

Combination of attendance, participation in discussion, and assignments

6. Notes:

Oral Health Promotion

Lecture (Code:8401, 1st-year : 6 units)
Practice (Code:8402, 1st-～2nd-year: 4 units)
Lab (Code:8403, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor Yoko Kawaguchi Associate Professor Masayuki Ueno
Assistant Professor Sayaka Furukawa
Contact person: Yoko Kawaguchi E-mail yoko.ohp@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The goal of the course is to foster dental health professionals who can appropriately deal with the change of trend and environment in dentistry, analyze and solve environmental, social and economic problems related to oral health, and practice and develop oral health promotion at individual and community levels. Specific topics include prevention of oral diseases, clinical practices of dental public health, basic principles and methods of oral epidemiology, social aspect of oral diseases, primary health care and health promotion in various settings, and oral health promotion within the context of health care and education system. The course consists of didactic lectures, case presentations and discussion sessions.

Available programs:

Lecture Every Tuesdays 15:00 – 17:00 (2nd semester)
Special Lecture as needed
Seminar as needed
Journal Club as needed

Practice

Goals/Outline:

Field work is an opportunity to apply key concepts of planning, strategies and evaluation methods, which are essential for developing and practicing oral health promotion and prevention programs at individual and community levels, and analyze actual cases.

Available programs:

Case presentation seminars as needed
Field research and activities as needed

Lab

Goals/Outline:

Implement an intervention program in the field of maternal health, school health, industrial health or adult/elderly health, and conduct analysis and evaluation on the effects of the intervention program.

Available program:

Conference on intervention programs as needed

3. Format:

Small-group format

4. Venue:

To be announced depending on the programs by course instructors

5. Grading:

Comprehensive evaluation based on the lectures, course participation and research content

6. Notes:

Sports Medicine and Dentistry

Lecture (Code:8411, 1st-year : 6 units)
Practice (Code:8412, 1st-～2nd-year: 4 units)
Lab (Code:8413, 2nd-～3rd-year: 8 units)

1. Instructors:

Associate Professor Toshiaki UENO
Assistant Professor Toshiyuki TAKAHASHI ・ Hiroshi CHUREI
Contact person: Hiroshi CHUREI E-mail chu.spmd@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The following topics on sports medicine/dentistry will be lectured: 1. Maintenance and improvement of individual's health by various sporting activities and recreations; 2. Diagnosis, treatment and prevention of sports injury and disorders; 3. Improvement and optimization of athletic performance on the basis of exercise physiological and kinesiological studies.

Available programs:

Lecture	As needed
Special Lecture	As needed
SPMD Seminar	As needed
Journal Club	every Wednesday 17:30-18:30

Practice

Goals/Outline:

Trends and controversial points in recent researches for sports medicine/dentistry will de discussed through participation and presentation in Journal Club. Clinical skills and knowledge of diagnosis, treatment and prevention will be studied through participation in Clinical Conference.

Available programs:

Journal Club	every Wednesday 17:30-18:30
Clinical Conference	As needed

Lab

Goals/Outline:

Handlings of experimental devices for sport medicine/dentistry study and collection and analysis of data will be practically trained through participation in research group in SPMD Lab.

Available program:

Participation in Research Group of SPMD Lab As needed

3. Format:

Lectures and small-group discussions in will be performed.

4. Venue:

Venues are different from each program. Please confirm the venue in advance.

5. Grading:

Grading is performed comprehensively based on participation situation and learning attitude to programs.

6. Notes:

Educational System in Dentistry

Lecture (Code:8421, 1st-year : 6 units)
Practice (Code:8422, 1st-～2nd-year: 4 units)
Lab (Code:8423, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor Kouji ARAKI
Junior Associate Professor(non-full time) Yukio NAKAMURA Hiroki KATAOKA
Contact person: Center for Education Research of Medicine and Dentistry Kouji ARAKI
E-mail k.araki.gend@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Main object of educational system in dentistry in the graduate course is to provide opportunity to study evaluation method for dental education curriculum, inspection method of the validity and reliability of the evaluation system for dental education, evaluation system compared between international and Japanese education level in undergraduate or after the graduation periods, and dental clinical skills improvement by the virtual reality simulation system.

Available programs:

Lecture	Monday of September from May 17：00～19：00
Special Lecture	At any time

Practice

Goals/Outline:

Students participate in data analysis and the comparison with an international educational level evaluation system.

Available programs:

Participation in a practical group At any time

Lab

Goals/Outline:

Students participate in research of the evaluation method of a new educational system while experiencing the teaching materials and system developed for simulation education.

Available program:

Participation in a research group At any time

3. Format:

The instructor performs guidance for students to help teaching self-study, problem discovery, and development of the problem solving ability. In the practice, students can perform experience training using equipment developed for simulation education.

4. Venue:

Confirm it to the instructor in a different place by a program beforehand.

5. Grading:

Instructor generally evaluates it based on a lecture, practice, lab, the participation situation to the experiment and an action.

6. Notes:

There are not the number of people restrictions in particular about study.
The practice assumes one degree less than 10 people a principle.
The class in the English is possible depending on hope.

Educational Media Development

Lecture (Code:8431, 1st-year : 6 units)
Practice (Code:8432, 1st-～2nd-year: 4 units)
Lab (Code:8433, 2nd-～3rd-year: 8 units)

1. Instructors:

Contact person: Professor Atsuhiro Kinoshita E-mail kinoshita.emdv@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The goals of the course are to understand the characteristics of current educational systems and educational media utilizing information and communication technologies, such as computer assisted simulation systems, e-learning systems, and live broadcasting systems, and to learn how to create original educational materials, and to master the way to apply them on the education for health science professionals.

Available programs:

Lecture as needed

Review meeting for the new teaching materials: 18:00 - 21:00 on every second Tuesday.

Practice

Goals/outline:

The goal of the practice is to create a new original teaching material utilizing information and communication technologies, such as computer assisted simulation systems, and e-learning systems.

Available programs:

Practice for creating new teaching material as needed

Lab

Goals/outline:

The goals of the lab are to develop a new original teaching material or an educational system utilizing information and communication technologies, to apply it on the education for health science professionals, to evaluate its educational effects, and to present the results of the study.

Available programs:

Research meeting as needed

3. Format:

Small-group format.

4. Venue:

Information Retrieval Room, University Library or Faculty Room, Educational Media Development.

5. Grading:

Comprehensive evaluation based on the original teaching materials, or academic presentation.

6. Notes:

none.

Geriatrics and Vascular Medicine

Lecture (Code:7161, 1styear:6units)
Practice (Code:7162, 2ndyear:4units)
Lab (Code:7163, 2nd-～3rdyear: 8 units)

1. Instructors

Professor: Kentaro Shimokado,
Contact person: Kentaro Shimokado Email: k.shimoka.vasc@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline

The goal is to understand various mechanisms that are working to maintain functional integrity of the vascular system, and vascular diseases as consequences of failure of these mechanisms. The vascular system is an intelligent network delivering materials, cells and information to various organs and tissues that require them. The delivery is tightly regulated by mechanisms such as ligand-receptor systems, NO, adhesion molecules expressed on the vascular endothelium. Physical and functional damage to the vascular system is repaired by an inflammatory process including macrophages, cytokines/growth factors and myofibroblasts. Aging and inappropriate life styles cause malfunction of these regulatory mechanisms and repairing process, and end up vascular diseases.

Available programs

Lecture: as required
Special Lecture: as required
Semminar: as required
Journal Club: Friday 12:00-13:00

Practice / Lab

Goals /outline

By conducting research under a superviser, students will obtain knowledge and skills of asking appropriate scientific questions, planning a series of experiments to answer the question, and conductiong actual experiments using various experimental techniques.
Students also learn how to present his/her data at scientific meetings and how to write scientific papers.

Available programs

Mechanisms for the development of atherosclerosis, Coronary risk factors, Postprandial hyperlipidemia, Cell therapy for peripheral artery diseases, SMP-30 and aging,

3. Format:

Lectures are given in a small group. Laboratory work is personalized.

4. Venue:

To be announced

5: Grading:

Progress reports and the final research paper

Rehabilitation Medicine

Lecture (Code:7171, 1styear:6units)
Practice (Code:7172, 2ndyear:4units)
Lab (Code:7173, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Sadao MORITA E-mail morita.reh@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Rehabilitation medicine consists of physical, occupational and speech therapy. Main theme of rehabilitation medicine in graduate course is to study 3-dimentional motion analysis in activities of daily living and molecular biological analysis of disuse atrophy.

Available programs:

Lecture The lecture is irregular but performed at any time.

Special Lecture As occasion demands

Seminar Tuesday 17:30-20:00

Journal Club Monday 13:00-15:00

Conference Tuesday 8:30-9:00

Practice

Goals/Outline:

To understand the evaluation methods of activities of daily living, and to use them for the clinical practice. The ability to judge the fitting of limb prosthesis.

Available programs:

Prosthesis Clinic / Every Tuesday

Lab

Goals/Outline:

The 3-dementional motion analysis of gait and upper limb movement in activities of daily living. The 3-dementional measurement of amputation stump for good fitting of artificial limb socket.

Available program:

Prosthesis Clinic / Every Tuesday or any time

3. Format:

Small classes

4. Venue:

Rehabilitation training room

5. Grading:

Evaluation of understanding degree of the lecture

Gerodontology and Oral Rehabilitation

(Complete Denture Prosthodontics)

Lecture (Code:8441, 1st-year : 6 units)
Practice (Code:8442, 1st-～2nd-year: 4 units)
Lab (Code:8443, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor Shunsuke: MINAKUCHI Associate Professor Tsuneto Owatari
Assistant Professor: Tatsuro UCHIDA, Norihisa AKIBA, Manabu KANAZAWA, Yusuke SATO, Maiko IWAKI
Contact person: Shunsuke: MINAKUCHI, Department of Gerodontology E-mail matsu.gerd@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The basic objective of research in this field is the prevention and restoration of decreased oral functions accompanying aging. Lectures are given in follow areas.

1) Dental approaches for restoring oral cavity functions in the elderly
2) Research relating to the role of dental treatment in an aging society
3) Functional and psychological problems of edentulous patients and complete denture treatment.

Available programs:

Lecture	Arranged
Special Lecture	Arranged (scheduled for 3-4 sessions/year)
Seminar	Arranged
Journal Club	Monday 17:00-18:00

Practice

Goals/Outline:

Practice of actual dental treatment (including monitoring) on elderly individuals and fabricating complete dentures, taking impression, jaw relation records and aftercare for acquisition of skills.

Available programs:

Participation in areas of study and research at hospitals and other university-external facilities
Seminar on holistic care (Arranged)

Lab

Goals/Outline:

A physical action produces aging change. Oral functions, such as mastication, tongue movement, and lips closing present functional decline with aging. We have to understand these an elderly patient's

change, and have to develop and master the effective technique about evaluating a masticatory function, body activity and central function, and recovery technique by removable dentures.

Available program:

Dysphagia rehabilitation, evaluating the medical risk of geriatric dental patients, evaluation of masticatory functions,complete denture CAD/CAM, denture materials, implant over denture

3. **Format:**

Small class size designated.

4. **Venue:**

Differs depending on program; check with instructor before attending.

5. **Grading:**

Participation in class, seminar and practice will be graded comprehensively. In Lab, grading will be done based on contribution for the study group, reports and presentation at academic meetings.

6. **Notes:**

In principle, class size is not limited.

Laboratory Medicine

Lecture (Code:7181, 1styear:6units)
Practice (Code:7182, 2ndyear:4units)
Lab (Code:7183, 2nd-~3rdyear: 8 units)

1. Instructors:

Contact person: Nobuo Nara E-mail nara.mlab@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The development and application of laboratory medicine for the clinical medicine will be discussed.

Available programs:

Lecture Mid-April to mid-May of the year

Practice

Goals/Outline:

To understand the pathophysiology and diagnosis of clinical cases by laboratory data.

Available programs:

Conference Friday afternoon in April through June

Lab

Goals/Outline:

Practice of hematological analysis based on the peripheral blood smears and bone marrow aspirated smears.

Available program:

Lab Wednesday afternoon in April through June

3. Format:

A small group tutorial

4. Venue:

Should be announced

5. Grading:

Paper examination and interview will be used for grading.

6. Notes:

Any question will be answered by the contact person.

Critical Care Medicine

Lecture (Code:7191, 1styear:6units)
Practice (Code:7192, 2ndyear:4units)
Lab (Code:7193, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Chieko Mitaka E-mail c.mitaka.icu@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

In a critical situation, common pathophysiology is same irrespective of causes. After severe injury, reaction of self defence mechanism often damage oneself, resulting in development of multiple organ dysfunction syndrome (MODS). Our goals are to elucidate mechanisms of MODS and develop strategy for prevention of MODS.

Available programs:

Lecture Any time

Special Lecture Any time

Seminar Any time

Journal Club Any time

Conference Every Thursday 18:00-19:00,

Practice

Goals/Outline:

To study mechanisms of acute lung injury, acute circulatory failure, acute hepatic failure, and acute kidney injury.

Available programs:

Research seminar (Department of Anesthesiology, Department of Critical Care Medicine, Department of Dental Anesthesiology), Third Saturday of every month 10:00 – 11:00
Round of ICU (every day 8:30 – 9:30)

Lab

Goals/Outline:

To elucidate the mechanism of multiple organ dysfunction syndrome (MODS) by reaction of innate immunity and develop a new treatment and prevention of MODS.

Available program:

Experiment of acute kidney injury rat model, 1/month, 12:00 – 17:00

1) Method of tracheostomy
2) Mechanical ventilation
3) Insertion of cannula into artery and vein
4) Renal ischemia/reperfusion model
5) Detection of expression of cytokine mRNA in lung and kidney tissue by PCR

3. Format:

A small class. We discuss about our research as much as possible to interact each other.

4. Venue:

Please ask instructor before attending a lecture, because it depends on the program.

5. Grading:

General assessment which is based on attendance rate and research content.

6. Notes:

Although there is no limit of number of people, we prefer within 10 people in conference and class presentation.

Liaison Psychiatry and Palliative Medicine

Lecture (Code:7201, 1styear:6units)
Practice (Code:7202, 2ndyear:4units)
Lab (Code:7203, 2nd-~3rdyear: 8 units)

1. Instructors:

Contact person: Eisuke Matsushima E-mail em.lppm@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

- Understand the psychosocial issues in the general medical settings from a viewpoint of comprehensive medicine
- Develop skills to provide a comprehensive diagnosis, treatment and prevention of psychosomatic problems in physical illness
- The lectures would cover the broad area of consultation-liaison psychiatry including;
  - Psychological problems and psychiatric symptoms in the general medical settings
  - Palliative care for patients with terminal disease

Available programs:

Lecture at any time

Special Lecture at any time

Seminar at any time

Journal Club biweekly Thursday 17:30-19:00

Practice

Goals/Outline:

- Develop new methods for diagnosis, treatment and prevention of psychosomatic problem through case discussions
- Learn and practice to develop assessments and design appropriate treatment plans for patients with various psychiatric disorders.

Available programs:

Lab

Goals/Outline:

- Our research projects are;
  - Intervention study on physically ill patients with psychiatric problem
  - Clinical-physiological research on psychiatric patients
- Have an up-to-date knowledge of scientific findings and practice specialized research techniques for these area
- Apply these knowledge and techniques for further development of current research

Available programs:

Students can participate research activities at any time.

3. Format:

Class sizes are kept small to facilitate student-teacher interaction and class discussion

4. Venue:

To be announced.

5. Grading:

Grades are dependent on attendance, research work, presentation at academic conference and research paper publications.

6. Notes:

Journal club and case discussion will have less than 20 participants.

Pharmacokinetics and Pharmacodynamics

Lecture (Code:7211, 1styear:6units)
Practice (Code:7212, 2ndyear:4units)
Lab (Code:7213, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor Masato Yasuhara, Associate Professor Masashi Nagata
Contact person: Prof. Masato Yasuhara E-mail yasuhara.mpha@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

An outline of the drug transport across the biomembrane and the drug disposition in the cell, organ and whole body will be reviewed and the recent advances on the effects of disease states and concurrent drugs on the pharmacokinetics of drugs will be discussed. In addition, the kinetic aspect of pharmacokinetic and pharmacodynamic analysis will be lectured.

Available programs:

Lecture TBA

Special Lecture TBA

Pharmacy Seminar Monday 17:30～18:30

Practice

Goals/Outline:

Recent literatures on the absorption, distribution, metabolism and excretion (pharmacokinetics) of drugs and related fields will be introduced and discussed. The practice of pharmacokinetic analysis based on the population approach or Bayesian method will be conducted.

Available programs:

Laboratory conference Thursday 18:00～19:00

Lab

Goals/Outline:

Fundamental experimental techniques such as drug concentration measurement, drug effect evaluation and kinetic analysis will be practiced and applied to the development of the individual dosage adjustment based on the drug concentration monitoring for individual patients.

Available program:

Join the research program TBA

3. Format:

The course is a small class and will have a discussion chance with registrants.

4. Venue:

To be asked to the instructor before registration.

5. Grading:

The degree of participation to the lecture, practice and laboratory work will be reviewed and evaluated comprehensively.

6. Notes:

The number of participants to the Pharmacy Seminar is limited to 10.

Medical Education Research and Development

Lecture (Code:7221, 1styear:6units)
Practice (Code:7222, 2ndyear:4units)
Lab (Code:7223, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor Yujiro TANAKA　　Junior Associate Professor Makoto TAKAHASHI
Related Departments:
The Center for Postgraduate Medical Education　　Junior Associate Professor　Yuki SUMI
Junior Associate Professor　Toru SUGIYAMA
The Department of General Medicine　　Junior Associate Professor　Shinya OOKA
The Center for Medical Welfare and Support　　Junior Associate Professor　Hajime IZUMIYAMA
Contact person: Makoto TAKAHASHI　　E-mail takahashi.merd@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

We address many problems about clinical education and discuss several approaches to their solutions. These problems have not yet been given a theoretical framework in order to examine various social elements closely related to them. Our aim is to construct an educational theory that can deal with practical difficulties and to propose possible solutions.

Available programs:

Lecture　TBA

Seminar　TBA

Conference　11:40-12:40 on every Friday

Practice

Goals/Outline:

We pick out a problem based on a real case, consider a solution based on any applicable theory, and simulate for evaluation methods for the proposed solution.

Available programs:

Conference　TBA

Dentistry for Persons with Disabilities

Lecture (Code:8451, 1st-year : 6 units)
Practice (Code:8452, 1st-～2nd-year: 4 units)
Lab (Code:8453, 2nd-～3rd-year: 8 units)

1. Instructors:

Associate Professor Osamu Shinozuka Assistant Professor Yasuka Kusumoto
Part-time Lecturer Hiroyuki Ishikawa, Youhei Takeuchi, Moriyuki Nakamura
Contact person: Osamu Shinozuka E-mail o.shinozuka.dpd@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Lectures on evaluation of intellectual disability (mental retardation, autism spectrum disorder, etc.), and physical disability (cerebral palsy, systemic disease, visual and hearing disorders, etc.), and the methods for management of these disabilities will be given.

Available programs:

Lecture	Thursday	16:00～17:30
Special Lecture	as needed	
Seminar	as needed	
Journal Club	as needed	

Practice

Goals/Outline:

The students join the clinical work at Special Care Clinic to master diagnosis, treatment planning and behavior management for patients with special needs.

Available programs:

Clinical Conference	Wednesday 16:00～17:00

Lab

Goals/Outline:

The students participate in research concerning patients with special needs, and learn the basic methods and skills for experimentation

Available program:

The students can join any research groups at any time.

3. Format

Small-group class will be conducted.

4. Venue:

Lecture : Room 310 on the 3rd floor of Building 10 (Library Room of Dentistry for Persons with Disabilities)
Clinical Conference : Special Care Clinic on the 1st floor of Dental Building North

5. Grading:

Comprehensive assessment is done based on the situation of participation to lectures, practices, labs, and study content.

6. Notes:

If necessary, please contact us by e-mail.

Psychosomatic Dentistry

Lecture (Code:8471, 1st-year : 6 units)
Practice (Code:8472, 1st-～2nd-year: 4 units)
Lab (Code:8473, 2nd-～3rd-year: 8 units)

1. Instructors

Professor: Akira TOYOFUKU Part-time instructor: Haruhiko MOTOMURA
Contact person: Akira TOYOFUKU E-mail toyoompm@tmd.ac.jp

2. Course Description and Timetable

There are many patients who have 'medically and psychiatrically unexplained symptoms' in clinical dentistry. These symptoms are called "Oral Psychosomatic Disorders". It is not uncommon to see the patients with these conditions, so there is a growing need for proper treatment of the disorders from both sides of doctors and patients. It is important to have identity as a dentist on practice of psychosomatic dentistry. Therefore we have advanced strengthening of human resource development. In particular, we focus on cultivation of dentists who can be readily applied their knowledge of psychosomatic medicine to clinical practice. And we are working towards establishment of 'Psychosomatic Dentistry'. Also regarding education for graduate student, we focus on clinical practice for development of dentists who have great skill in psychosomatic dentistry.

Lecture

Goal/outline

Seminar on Analysis of Mind-body Interaction Mechanisms and Clinical Application. The aim of this lecture is to learn about the features and mechanisms of oral psychosomatic disorders, especially chronic oral pain and phantom bite and discuss the clinical application on patients.

Available programs:

Lecture any time
Special Lecture any time
Seminar any time
Journal Club 8:00~8:25 every Friday
Clinical Conference 17:00~18:00 every Wednesday

Practice

Goals/Outline:

Learn about clinical research on mind-body interaction mechanisms, especially on psychogenic oral pain. Method to carry out epidemiology, symptomatology and psychosocial treatment-related research of oral psychosomatic disorders including burning mouth syndrome, atypical odontalgia, oral dysesthesia and occlusal discomfort(phantom bite syndrome) will be supervised.

Available programs:

1) Clinical round by professor (every day)
2) Study on pathophysiological mechanism of oral psychosomatic disorders
3) Psychosomatic study on oro-facial medically and psychiatrically unexplained symptoms
4) Development of effective treatments for oral psychosomatic disorders in primary care

Lab

Goals/Outline:

Research on stomatosensory information-processing mechanisms between trigeminal nerve and the central nervous system. Method to carry out cognitive neuroscience, psychopharmachology, pathophysiology, and biological treatmentrelated research of oral psychosomatic disorders including burning mouth syndrome, atypical odontalgia, oral dysesthesia and occlusal discomfort(phantom bite syndrome) will be supervised. Our research focuses on body-mind pathophysiology of "phantom tooth pain", especially information processing of the pain in the brain and the descending modulatory system in the central nervous system.

Available program:

1) Brain imaging of oral psychosomatic disorders
2) Psychopharmacological study on oral psychosomatic disorders
3) Experimental Research on chronic oral pain

3. **Format**
   Hold a small class in principle and discussion as occasion demands

4. **Venue**
   Ask to contact person before the class

5. **Grading**
   Totally evaluate the degree of participation, understanding, and so on

6. **Notes**
   Intend to hold some special classes about 'mind' and 'consciousness' from a viewpoint of brain science and to visiting psychiatry ward.
   Intend to hold some special classes about Emergency Psychiatric and Physical Medicine.

Behavioral Dentistry

Lecture(Code:8484,
1st-year : 6 units)
Practice(Code:8482,
1st-～2nd-year: 4 units)
Lab
(Code:8483,2nd-～3rd-year: 8 units)

1. Instructors:

Contact person: Shiro MATAKI E-mail mataki.diag@tmd.ac.jp
Hiroshi Nitta E-mail nitta.behd@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

To practice desirable comprehensive medical care, learners get knowledge of applying behavioral sciences in providing health care

Available programs:

Lecture : Term : October 2013 ~ February 2014

Special Lecture : (at all times)

Seminar : Generally every Tuesday, 18:30 ~ 20:00

Journal Club: (at all times)

Conference Generally every monday, 16:30 ~ 17:30 (with staffs of General Dentistry)

Practice

Goals/Outline:

Learners will be able to get practical competence for interpersonal communication skill and statistics on behavioral sciences in health care

Available programs:

Conference, Journal Club on related readings, Case Study, Data analysis of questionnaire for Patient Satisfaction

Lab

Goals/Outline:

Learners will be able to make research plan for behavioral sciences in health care by applying learned knowledge and skills.

Available program:

Case Study, Assistant of data analysis of questionnaire for Patient Satisfaction

3. Format:

The student attending a lecture distributes the teaching materials beforehand and explains about a content of a part in charge of. Seminar is carried out in a reading by turns form. Other reference-related documents are used as needed. The participant performs discussion based on a clinical case in all the members. The participant takes the record every time and reflects on the next time

4. Venue:

Generally, Lab. Room of Behavioral Dentistry (Building #10, 3F) (Practice and Lab. in an other place as needed)

5. Grading:

Integrated evaluation:
Percentage of attendance for Lecture, Practice and Lab.
Research content.
Research report
Presentation

6. Notes:

Temporomandibular Joint and Oral Function

Lecture (Code:8491, 1st-year : 6 units)
Practice (Code:8492, 1st-～2nd-year: 4 units)
Lab (Code:8493, 2nd-～3rd-year: 8 units)

1. Instructors:

Contact person: Koji Kino E-mail k-kino.tmj@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

To understand physiological systems of a mandible, masticatory muscles and occlusion those maintain a jaw function.

To understand pathologic conditions, etiologic factors, diagnoses and therapies for abnormalities and disorders of a temporomandibular joint and masticatory muscles, because these abnormalities and disorders, especially temporomandibular disorders, inhibit normal jaw function, decrease a QOL and bring instability of occlusion, then make it difficult to reconstruct an appropriate occlusal relationship.

Temporomandibular disorders are recognized as multi-factorial diseases. It has been understood that a symptom begin and is prolonged by piling up of several factors, such as psychological factors, behavioral factors and anatomical factors. There are various factors to associate with etiology and with prolongation of symptom. Statistical procedure, especially multivariate analysis, is necessary to clarify this association. We give an outline about those statistical procedures in this lecture.

Available programs:

Lecture 17:00-19:00 on Wednesday, Oct-Nov. Five times

Special Lecture at any time

Practice

Goals/Outline:

To understand diagnoses and roles of contributing factors on onset and perpetuation of temporomandibular disorders by coming in contact with patients in our clinical office.

Available programs:

Clinical office; Mon, Wed, Thu, Fri 9:00-12:00

Lab

Goals/Outline:

To understand an importance of statistical methods for clinical study, and to select an appropriate method and use it on own study.

Available program:

Anytime when a study theme decided.

3. Format:

Lectures and discussions in a small group

4. Venue:

We will decide it according to a program.

5. Grading:

Evaluations made by the frequency of attendance to the seminar and activities in the participation in discussions

6. Notes:

Neuroanatomy and Cellular Neurobiology

Lecture (Code: 7251, 1st year: 6units)
Practice (Code: 7252, 2nd year: 4units)
Lab (Code: 7253, 2nd-~3rd year: 8 units)

1. Instructors:

Professor: Sumio TERADA, Assistant Professors: Masahiko KAWAGISHI, Kenta SAITO, Keisuke SATO
Contact person: Sumio TERADA E-mail: terada.nana@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Morphological and molecular cell biological basis of selected studies is discussed. Topics include cellular neurobiology and other related areas with special reference to microscopic and spectroscopic techniques. Special lectures by prominent researchers are arranged irregularly.

Available programs:

Conference and Seminar	From 3:00 PM, on every other Friday.
Special Lecture	To be arranged.
Journal Club	To be arranged.

Practice

Goals/Outline:

Survey of the anatomy and functional organization of the human central nervous system with clinical applications, from basic to expert level. Advanced level of survey (including specialized journal club, and/or conference) is arranged, if necessary.

Available programs:

Cellular neurobiology practice (Basic)	Refer to the medical school timetable (Neuroanatomy).
Cellular neurobiology practice (Advanced)	To be arranged.
Journal Club	To be arranged.
Conference and Seminar	From 3:00 PM, on every other Friday.

Lab

Goals/Outline:

Lectures and laboratory treating the central nervous system from the ultramicroscopic points of view are arranged.

Available program:

Cellular neurobiology lab	Consult the course manager. Over two solid weeks are necessary.

3. Format:

Special Lectures are open to every student interested in attending. Limited to 5-6 students in other programs.

4. Venue:

Lecture:

Conference and Seminar, Journal Club	Staff Room 1/2, Neuroanatomy and Cellular Neurobiology Section (Building 3, 13th floor)
Special Lecture	To be announced.

Practice:

Cellular neurobiology practice (Basic)	Refer to the medical school timetable (Neuroanatomy).
Cellular neurobiology practice (Advanced)	Lab Rooms, Neuroanatomy and Cellular Neurobiology Section (Building 3, 13th floor)
Journal Club, Conference and Seminar	Staff Room 1/2, Neuroanatomy and Cellular Neurobiology Section (Building 3, 13th floor)

Lab:

Lab Rooms, Neuroanatomy and Cellular Neurobiology Section (Building 3, 13th floor)
EM Room, Instrumental Analysis Research Division, Research Center for Medical and Dental Sciences (Building 8 South, 3rd floor)

5. Grading:

Grading will be based on class participation (100% for Lecture and Practice, 75% for Lab) and on a short paper (25% for Lab) in English or Japanese.

6. Notes:

Enrollment limited up to 5-6 students except Special Lectures.
Prereq; Permission of instructor for non-medical students.
Preference to non-medical graduate students for Cellular neurobiology practice (Basic).

Systems Neurophysiology

Lecture (Code:7261, 1styear:6units)
Practice (Code:7262, 2ndyear:4units)
Lab (Code:7263, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Izumi Sugihara E-mail isugihara.phy1@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The nervous system is studied in a variety of ways from gene, molecular through cellular, neural network, and in vivo levels because of its anatomical complexity and functional diversity. The goal of our education is for students to understand the link between the morphology and function of the nervous system through neurophysiological approaches mainly at the neural network level and to learn a way of thinking about further questions about the nervous system, including those about pathological states of the nervous system in diseases. For this purpose, we give lectures on the neural structure, network, function, development and molecular expression of the cerebellum, cerebrum, basal ganglia, and brainstem.

Available programs:

Lecture arbitrary
Special Lecture arbitrary
Journal Club on Tuesday 10:00~11:00

Practice

Goals/Outline:

To support for students to learn for themselves basic matters in neuroscience and neurophysiology, we provide technical practices, journal club and seminars for progress reports. Technical practices include basic electronics (e.g. designing and making an amplifier), computer simulation programming, and analysis of neural networks using light and fluorescent microscopes.

Available programs:

Journal Club on Tuesday 9:30~10:00

Lab

Goals/Outline:

To understand the structural and functional organization of the nervous system, we support for students to learn electrophysiological techniques and neuronal labeling in anesthetized animals, in trained animals and in vitro preparations. We recommend students to learn data acquisition by computers, analysis of neural activity, and basic statistical analysis. Students can also participate in basic analysis of labeled neural networks.

Available program:

Experiments and data analysis arbitrary

Experiments include anesthesia, brain surgery (injection of tracers), perfusion, electrical microstimulation, recording and analysis of neural activity, neuronal labeling with immunohistochemical techniques, and three-dimensional mapping with a light microscope.

3. Format:

Practices are designed for a small number of students.

4. Venue:

Arranged by consultation with the instructor.

5. Grading:

We evaluate students generally based on progress reports on their studies and presentations at meetings in addition to attendance at lectures, practices, and experiments.

6. Notes:

http://www.tmd.ac.jp/med/eng/eng/phy1-E.html

Pharmacology and Neurobiology

Lecture (Code:7271, 1styear:6units)
Practice (Code:7272, 2ndyear:4units)
Lab (Code:7273, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Tsutomu Tanabe Assistant professor: Hironao Saegusa, Shuqin Zong
Contact person: Tsutomu Tanabe E-mail t-tanabe.mphm@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

In the brain function like (1) learning and memory, (2) cognition and behavior, (3) generation of consciousness, (4) personality and mentality, many intriguing questions are still remained to be answered. On the other hand, in the era of satiation and longevity, needs for preventing and treating numerous neurological disorders and pain have been risen. For the purpose of integrating the accumulated findings of the neuronal function at the molecular and cellular level into the ones at the system level, we will lecture the subjects on (1) Neurotransmitter receptors, G-proteins and ion channels, (2) Ion channelopathies, (3) Neurodegeneration and functional disturbance in the central nervous system, (4) Central control of pain perception and sensation, (5) Pharmacological control of stem cell proliferation and differentiation in this special lecture course.

Available programs:

Lecture	intermittently	
Special Lecture	intermittently	
Seminar	intermittently	
Journal Club	Monday 11:00-12:00	Thursday 17:30-18:30

Practice

Goals/Outline:

1. Acquire the skills of preparing an informative presentation and develop an effective way of presenting results in the audience.
2. Understand the meaning of the research conducted and learn how to figure out the meaningful future directions from the conclusions.
3. Practice answering the questions raised by the audience.

Available programs:

Conference report	on demand
Progress report	once a month for each small group
Research presentation	once a year

Lab

Goals/Outline:

During the first couple of months, students are requested to acquire basic techniques of biochemistry, molecular biology, pharmacology and electrophysiology that are routinely used in our laboratory. Then students will be given a small project to do using the techniques they have learned during the initial training. Students are also required to read relevant scientific papers and conduct seminar style lectures to other lab members monthly. After completion of the initial phase, students start their own project under the supervision of the faculties in the lab.

Available program:

1. Molecular basis of calcium channelopathy
2. Molecular mechanism of neurodegenerative disease
3. Mechanism of modal shift of cell sensor: from touch perception to pain sensation
4. Molecular mechanism of neuropathic pain
5. Microglial activation and neurological disease
6. Failure of miRNA regulation and neurological disease

3. Format:

Small group (5~6 persons) study

4. Venue:

Special lecture course and practice course are in the professor office and lab works are in the laboratories.

5. Grading:

Grading is based on the wide-ranging evaluations, including attendance record and the degree of contribution on the course.

6. Notes:

none

Molecular Neuroscience

Lecture (Code:7281, 1styear:6units)
Practice (Code:7282, 2ndyear:4units)
Lab (Code:7283, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Kohichi Tanaka
Contact person: Molecular and Cognitive Neuroscience Kohichi Tanaka E-mail tanaka.aud@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Cognition consists of sensory inputs from vision, somatic sensation, hearing, olfaction and taste, and memory retrieved from these. In this lecture, we will review the latest findings of mechanism of sensation and memory, the fundamental processes of cognition, at the level of molecule, cell, system and behavior. Furthermore, we address how sum of these findings constitutes cognition.

Available programs:

Lecture as needed

Special Lecture as needed

Seminar as needed

Journal Club Every Friday 11:00 – 12:00

Conference as needed

Practice

Goals/Outline:

The aim of this practice is to learn molecular biological, anatomical, electrophysiological and psychological approaches to elucidate the mechanism of cognition. Moreover, based on previous case reports of cognitive deficits, students should plan and discuss what kinds of the researches are possible and meaningful to elucidate the pathology of these diseases, leading to unveil the mechanism of cognition.

Available programs:

Progress Report, Every Friday 10:00 – 11:00

Lab

Goals/Outline:

Students should generate genetically modified animals to comprehensively understand the cognitive mechanisms at the level of molecule to behavior. Then, students should analyze cognitive deficits of mutant animals and those molecular mechanisms.

Available program:

Participation in the ongoing research project; as needed
Training for cell biology: five times a year 13:00 – 16:00

Experiment:

1. Gene cloning and generation of targeting vector.
2. Generation of genetically modified mice
3. Behavioral analysis of the mice
4. Morphological analysis of central nervous systems.

3. Format:

All programs will be held with small-group. We will provide opportunities for discussions as much as possible to improve communication with students.

4. Venue:

Please confirm venue with instructors

5. Grading:

Students are evaluated for their research reports, presentations at academic meetings and publications.

6. Notes:

In principle, progress report and journal club are hold with less than ten participants.

Neuropathology

Lecture (Code:7291, 1styear:6units)
Practice (Code:7292, 2ndyear:4units)
Lab (Code:7293, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Hitoshi Okazawa E-mail okazawa.npat@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Recently, not only elucidation of molecular mechanisms underlying neurodegenerative disease pathology, but also development of therapeutic approaches utilizing the elucidated molecular mechanisms has been extensively progressed. In this lecture, while we teach students the latest progress in the field, we will especially focus on understanding of aggregation of abnormal disease protein and molecular alteration or impairment of functional proteins caused by the protein aggregation in neuronal cells

Available programs:

Lecture As scheduled

Special Lecture As scheduled

Seminar As scheduled

Journal Club Once a week: 13:00-15:00

Conference As scheduled

Practice

Goals/Outline:

Each lab member should systematically describe their research progress and the knowledge in related field in short time. Advices to develop members' presentation skills will be given.

Available programs:

Lab

Goals/Outline:

To elucidate molecular mechanisms underlying neurodegenerative diseases and to develop new therapeutic approaches utilizing the molecular mechanisms obtained. We generally use fly and mouse models expressing the disease genes in neurons. Techniques that we use are: molecular biology using plasmid, cosmid, and virus vector; immunohistochemistry; primary culture of neuronal cells and neural stem cells; creation of genetically modified mouse.

Available program:

Rehearsals and reports for conferences: As needed
Research progress report: Tuesdays and Thursdays 17:00-18:00

3. Format:

The size of the class should be small. In order to stimulate interaction with participants, the class will be discussion – oriented one.

4. Venue:

Need to check with professor in advance; classes are different in each program.

5. Grading:

Evaluate based on quality of research reports, presentations in conferences, and /or scientific papers.

6. Notes:

Number of participants for journal club and research meeting in the lab should be around 10 people.

Ophthalmology and Visual Science

Lecture (Code:7301, 1styear:6units)
Practice (Code:7302, 2ndyear:4units)
Lab (Code:7303, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor and Chairman; Manabu Mochizuki, Associate Professor; Kyoko Ohno-Matsui, Assistant Professor; Yoshiharu Sugamoto, Hiroshi Takase

Contact person: Kyoko Ohno-Matsui E-mail k.ohno.oph@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

To understand the pathophysiology of various tissues within the eye and visual pathways and to understand the pathogenesis, diagnosis, and treatments of various ocular disorders

Available programs:

Lecture as needed

Special Lecture as needed

Seminar as needed

Journal Club as needed

Conference (clinical); every Wednesday

Practice

Goals/Outline:

To realize the diagnostic procedures and treatment strategies against various ocular disorders

Available programs:

Research progress; once a month, second Tuesday
Clinical Conference: every Wednesday

Lab

Goals/Outline:

To investigate the pathogenesis of various ocular disorders using surgically obtained specimens or human eye samples by immunological, molecular biological, and pathological methods

Available program:

research progress; once a month, second Tuesday

3. Format:

To discuss the details of research protocols in a small group and to provide some lectures to facilitate the students to make their own research plan

4. Venue:

Ask the instructor for details

5. Grading:

Attendance at lecture and practice, and the research content are being evaluaded.

6. Notes:

We would like to recruit the students who are highly motivated and interested in visual science and ophthalmology.

Otorhinolaryngology

Lecture (Code:7311, 1st year:6 units)
Practice (Code:7312, 2nd year:4 units)
Lab (Code:7333, 2nd-～3rd year: 8 units)

1. Instructors:

Contact person: Ken Kitamura E-mail kitamura.oto@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Otorhinolaryngology manages various organs and disorders in ear, nose, throat, head and neck regions. Therefore, lots of signs, symptoms and disorders, that is, hearing disturbance, dysequilibrium, respiration, olfaction, swallowing, phonation, are research objects of otorhinolaryngology. Especially, communication disturbance concerning listening and speaking are featured speciality in otorhinolaryngology. Above mentioned organs have extremely precise mechanism, therefore, they suffer damages from various kinds of diseases, such like circulatory disturbance, infection, neoplasm and trauma. With current progress in molecular biology, novel mechanisms of otorhinolaryngological diseases will be investigated and the new prospects of the treatment will be presented.

In this course, we lecture pathology, etiology, diagnosis and treatment of otorhinolaryngological disorders with latest topics.

Available programs:

Special Lecture As occasion demands
Journal Club Every Tuesday morning.
Conference Every Tuesday evening

Practice

Goals/Outline:

You will learn basic diagnostic techniques, examinations and data interpretations in otorhinolaryngology. Following subjects should be mastered; Techniques: otoscope, rhinoscope, laryngoscope.
Examinations: Hearing tests including pure-tone, speech, Bekesy, impedance audiometry, tubal function testing, otoacoustic emission, electrocochleogram, auditory brainstem response. Equillibrium tests including standard tests, electronystagmography, gravicorder and three dimensional occulography. Rhinological test: smell test and rhinometry. Diagnostic observation: middle ear, paranasal sinus, nasopharynx, larynx and hypopharyngeal endoscope. Ultrasonography: parotid, submandibular gland, thyroid, parathyroid and lymph node.
Data interpretations: After obtaining these data, you interpret the data and make an appropriate diagnosis and treatment for the patients by yourself.

In addition to these program, cadaver dissection for temporal bone, nose and paranasal sinus, head and neck will be scheduled.

Available programs:

Neuro-otological conference: Every Tuesday (17:00-18:00)
Professor round: B10 Ward: Every Tuesday (9:00-10:00)
Clinical conference: Every Tuesday (18:00-19:00)
Research seminar: 10 times per year, Thursday evening.

Lab

Goals/Outline:

Mechanism causing otorhinolaryngological disorder varies, therefore, anatomy and physiology should be mastered. After that, clinical data, such as diagnosis and treatment outcome of the patient, are investigated and analyzed. Through these processes, your task is to investigate new features of pathology, and also to develop novel diagnostic methods and treatments. For this purpose, you can perform basic research using an animal model. In the laboratory, techniques of molecular biology, morphology, histopathology and electrophysiology are used.

Available program:

1) Molecular biology in hearing and dysequillibrim disorder.
2) Clinical studies on dysequillibrim disorder and its treatment.
3) Electrophysiological research in cochlear pathology (basic and clinical researches)
4) Investigation of images and image-guided surgery in this area.

3. Format:

Small group teaching is principle. Through mini-conference and one-minute lecture, thorough discussion with lecturer, is planned.

4. Venue:

Please contact the leaders prior to lecture.

5. Grading:

Achievement of attendance to the lecture, seminar, laboratory is evaluated. Research report and presentation in convention are also estimated. Your overall activity will be assessed.

6. Notes:

No limitation for applicant. Presenter in the journal group will be limited to 10 persons.

Neurology and Neurological Science

Lecture (Code:7321, 1st year: 6units)
Practice (Code:7322, 2nd year: 4units)
Lab (Code:7323, 2nd-～3rd year: 8 units)

1. Instructors:

Professor and Chairperson: Hidehiro Mizusawa
Research Professor: Takanori Yokota
Junior Associate Professor: Kinya Ishikawa, Nobuo Sanjo
Assistant Professor: Satoru Ishibashi, Takuya Ohkubo, Shoichiro Ishihara

Contact person: Hidehiro Mizusawa
E-mail: h-mizusawa.nuro@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/Outline:

Neurology and Neurological Science is a very broad, multidisciplinary field including degeneration, demyelination, paroxysmal disorder, vascular disorder, and inflammation that occurred in the central nervous system, peripheral nervous system, autonomic nervous system, and skeletal muscle.

Our field covers wide spectrum of neurological disorders, from those that are acute (e.g. stroke, disturbance of consciousness and seizure) to chronic/slowly progressive diseases (e.g. Alzheimer's disease), from common (e.g.epilepsy, headache) to very rare diseases, and from easily curable to intractable diseases. Throughout this doctoral course, the faculty and staff provide continued supports, explaining not only overview of the diseases but also new research methods such as molecular genetics, molecular biology, genetic engineering, immunological approach in order to elucidate causes and pathogenesis of these diseases and to establish therapies.

Available programs:

Lecture	as needed	
Special Lecture (e.g. ONSA seminar)	as needed	
Ochanomizu Brain Science Seminar	as needed	
Research Seminar	every Wednesday	19:00 - 20:00
Clinical Pharmacology Seminar	every Tuesday	16:00 - 16:15
Neurology Seminar	every Tuesday	16:15 - 16:30
Neurological culture/biochemistry research seminar	every Monday	19:00 - 20:30
Neurological molecular genetics research seminar	every Tuesday	20:00 - 21:30
	every Thursday	18:00 - 20:00
Genetic therapy research seminar	every Tuesday	17:00 - 19:00

Practice

Goals/Outline:

Our curriculum provides a program to practice the evaluation processes, enabling students to understand pathophysiology of cerebrovascular disorders, neurodegenerative diseases, and neuroimmunological diseases based on clinical examination and various laboratory examinations including ~~neurofunctional~~ neuroimaging study such as PET and MRI. In addition, the students practice the diagnostic process as well as process of deciding and performing a treatment.

Available programs:

Clinical neurology ward round	every Tuesday	8:00 - 12:00, 13:30 - 15:30
Professor's Morning ward round	every Weekday	8:30 - 9:00
Clinical conference	every Tuesday	8:00 - 9:00
Neuromuscular conference	every Monday	16:30 - 18:00
Neurophysiology conference	every Monday	18:00 - 19:30

Neurological molecular genetics practice	every Tuesday	19:00 - 20:00
Neurological vascular disorder practice	every Wednesday	20:00 - 20:30
Neurological tissue engineering practice	every Wednesday	20:30 - 21:00
Neuroimmunology conference	every Thursday	17:00 - 19:00
Neuroimaging conference	every Thursday	17:00 - 19:00
Stroke conference	alternate Wednesday	18:00 - 19:00
Integrated clinical conference	the 2nd Wednesday	19:00 - 20:00

Lab

Goals/Outline:

We conduct experiments by using immunological, molecular biological and molecular genetic methods in order to elucidate genes which are risk factors or causes of neurological diseases, metabolic derangement that leads to neuronal death, pathogeneses, and treatment for autoimmune diseases (e.g. Multiple Sclerosis, Myasthenia Gravis). We also carry out clinical studies using electrophysiological and neuroimaging techniques in order to elucidate pathophysiology.

Available programs:

Molecular genetics experiment	Everyday	available any time
Molecular biology experiment	Everyday	available any time
Biochemistry experiment	Everyday	available any time
Immunology experiment	Everyday	available any time
Morphology experiment	Everyday	available any time
Neuroimaging experiment	Every Thursday	available any time
Electrophysiology experiment	Every Tuesday, Wednesday	available any time

3. Format:

Students are trained by performing experiments, taking lectures and practicing in a small group. Throughout this course, students learn not only experimental techniques but also gain ideas and how to solve problems through discussions.

4. Venue:

Please check the website or office board for locations of lectures: Conference Room (B11F, medical hospital), Neurology and Neurological Science Laboratories (12F, 15F Building III), and CBIR (Center for Brain Integration Research) laboratory (10F, Building III)

5. Grading:

Students are evaluated based on their participation in the lectures, internships and experiments as well as their presentation at conferences and seminars. Publication of original papers is highly evaluated.

6. Notes:

The curriculum aims to provide education in a small group. Therefore, we may select applicants if candidates exceed the number of available enrollment spaces.

Psychiatry and Behavioral Sciences

Lecture (Code:7331, 1styear:6units)
Practice (Code:7332, 2ndyear:4units)
Lab (Code:7333, 2nd-~3rdyear: 8 units)

1. Instructors:

Toru Nishikawa, Professor
Contact person: Toru Nishikawa E-mail tnis.psyc@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The lecture course aims at understanding the mechanisms of the brain function and dysfunction underlying the expression of cognition and behavior, as well as the etiology and pathophysiology of mental disorders. The methodologies of basic and clinical research using cutting-edge technologies of molecular neurobiology, molecular genetics, neuroimaging, and neurophysiology will be instructed. Prevention and development of novel treatment of the diseases will be further discussed.

Available programs:

Lecture	as occasion demands
Special Lecture	as occasion demands
Seminar	as occasion demands
Journal Club	every other Monday 18:00-19:00
Conference	every other Thursday 18:00-19:00

Practice

Goals/Outline:

Training session program will be provided to master the internationally standardized classifications of operational diagnosis and the clinical scaling tools for psychiatric diseases. The basics for the planning of treatment based on the comprehension of the psychiatric symptoms and diagnosis process will be acquired through clinical pharmacology, neuroimaging, neurophysiology, clinical biochemistry, and molecular genetics. Further skills should be also obtained to establish research strategies to deal with unsolved problems.

Available programs:

Clinical conference	Thursday 11:00 – 12:30, 13:15 -17:00
Joint case conference of Department of Neurology, Neurosurgery and Neuropsychiatry	Second Wednesday 18:30-19:30
Research presentation	Monday of the 1st week 17:00-19:00
Epilepsy case conference	Tuesday of the 4th week 19:00-20:00
Research conference of mental disorders	as occasion demands

Lab

Goals/Outline:

The research goal is to investigate the neural mechanisms of mental disorders through the studies of clinical cases and experimental animal models. We will use the up-to-date techniques of the molecular biology, molecular genetics, neuroimaging, and neurophysiology to understand the etiology and pathophysoplogy of those illnesses and cognitive and behavioral dysfunctions at the molecular level. The final goal will be the development of novel diagnostic methods, treatment and prevention for the diseases.

Available program:

Ask the corresponding person.

3. Format:

Small group tutorial style by mentors, including research progress meeting, at-the-bench discussion, and journal seminars.

4. Venue:

Office of the Professor, outpatient station conference room at the University Hospital, and other seminar rooms.

5. Grading:

Evaluation will be based on the research progress reports and presentation, paper publication in the research journals, and presentation at the national and international conferences.

Neurosurgery

Lecture (Code:7341, 1styear:6units)
Practice (Code:7342, 2ndyear:4units)
Lab (Code:7343, 2nd-～3rdyear: 8 units)

1. Instructors

Professor: Taketoshi Maehara Associate Professor: Tadashi Nariai
Contact person: Taketoshi Maehara Email: maehara.nsrg@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline

There are various attracting subjects in the field of clinical or basic research. It is essential to acquire the sufficient knowledge and insight into the pathological conditions as well as normal functions of the central nervous system and spinal cord, which will directly benefit for the improvement of clinical results. Main educational purpose of neurosurgery in the graduate course is to provide students opportunity to acquire the proper technique as well as the broad knowledge, and to nurture the mind of exploration.

Available programs

Lecture:as required
Special Lecture: as required
Semminar: as required
Journal Club: Friday 8:00-8:30

Practice

Goals/outline

To acquirethe proper knowledge for diagnosis ofneuronaldisease and for neurosurgical treatment.Students will have the experience of various methods for the evaluation of neurological disorder as neurological exam, basic of neuro-imaging, physiological and molecular biological methods.

Available programs

Meet with patients: Tuesday and Thursday 8:15-10:30
Clinical conference: Tuesday 15:30-16:00
Joint conference: 2nd Wednesday 18:30-20:00
neuro-pathology joint conference: 2nd Monday 18:30-20:00
Pituitary tumor conference: as required
EEG conference: every Thursday 17:30-18:30
Stroke conference 1st and 3rd Tuesday 18:00-19:00

Lab

Goals/outline

The main purpose of Lab study is to give the solution to the clinical and basic problem in neuroscience field, by using proper methods of physiological, biochemical, molecular-biological, and neuroimaging techniques.

Available programs

Join Lab team: as required

Animal experiment course: as required

Cell biology course: as required

3. Format:

Small group (~10 students) is favorable.

Talk & discussion style.

4. Venue:

Ask the instructors before the class start.

5: Grading:

By students' attendance rate, oral presentation.

6. Notes:

Journal club & Meet with patients: maximum of 10 students

Join Lab team: maximum of 5 students.

Endovascular Surgery

Lecture (Code:7351, 1styear:6units)
Practice (Code:7352, 2ndyear:4units)
Lab (Code:7353, 2nd-～3rdyear: 8 units)

1. Instructors:

Shigeru Nemoto (professor, director) Yoshikazu Yoshino (associate professor),
Kazunori Miki (assistant professor) Toshiki Tomori (assistant professor)
Contact person: Shigeru Nemoto E-mail nemoto.evs@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Integrated lectures on anatomy, physiology, pathology, neurology with regard to endovascular surgery are performed. Clinical neuroscience (peripheral neuropathy, cerebrovascular disease, brain tumors etc) are also included.

Available programs:

Lecture	at any occasion
Special Lecture	at any occasion
Seminar	at any occasion
Journal Club	once a week
Conference	endovascular conference (Tokyo Seminar of Neuro-Endovascular Therapy for Stroke) once a year

Practice

Goals/Outline:

In each clinical case diagnostic imaging program is made for proper diagnosis and treatment. Interpretation of MRI, CT, SPECT and angiography findings are made at daily conference.
Technical learning of angiography is obtained at angio-suite.

Available programs:

Clinical round	every day	17:00-18:00
Stroke conference	every Tuesday	18:00-19:00
Combined neuroscience conference	every month (second Tuesday)	18:30-20:00

Lab

Goals/Outline:

Hemodynamic influence caused by endovascular devices are studied using computerized 3 dimension analysis of fluid hemodynamics.
To obtain catheterization and endovascular technique animal model and virtual simulator training are used.

Available program:

flow study program
simulator training program at skills lab (on plan)
animal model training program (collaboration program with Jichi Medical University)

3. Format:

few members each group

4. Venue:

conference room at 20F of MD tower

5. Grading:

attending the lecture and practice and oral exam.

6. Notes:

Due to clinical services for patients, members are limited.

NCNP Brain Physiology and Pathology

Lecture (Code:****, 1styear:6units)
Practice (Code:****, 2ndyear:4units)
Lab (Code:****, 2nd-~3rdyear: 8 units)

1. Instructors:

Professor and Chairman	Mikio Hoshino
Professor	Yu-ichi Goto, Hiroshi Kunugi, Manabu Honda, Noritaka Ichinohe
Associate Professor	Yoshitaka Nagai, Takashi Okada

2. Course Description and Timetable

Lecture

Goals/outline:

The nervous system is a very fine and complex organ to elicit the higher brain function and its malfunction causes a variety of neurological and psychiatric disorders in humans. In this lecture, students learn the structure, development and function of the normal nervous and muscle systems as well as pathology of developmental disorders, psychiatric disorders, neurological diseases and muscle diseases. Students also study the latest progress of advanced remedy for neuromuscular diseases. The lecture is held at NCNP (National Center of Neurology and Psychiatry).

Available programs:

Lecture	As scheduled
Special Lecture	As scheduled
Seminar	As scheduled

Practice

Goals/Outline:

Students should learn the structure, development and function of the nervous and muscle systems as well as experimental skills required for their research. Each member should give a talk at Journal Club and Research Progress. Advices to develop members' presentation skills will be given.

Available programs:

Conference	As needed
Journal Club	Once a week
Research Progress	As needed

Lab

Goals/Outline:

Our goal is to elucidate the molecular machinery underlying physiology and pathology of the nervous and muscle systems, which contributes to diagnosis and treatment of psychiatric, neurological and muscle diseases.

3. Format:

The size of the class is small. Each student is supervised by a senior scientist.

4. Venue:

Ask professors for details.

5. Grading:

We evaluate students generally based on progress reports on their studies and presentations at meetings in addition to attendance at lectures, practices, experiments and papers.

6. Notes:

NCNP Homepage http://www.ncnp.go.jp/

National Institute of Neuroscience, NCNP Homepage http://www.ncnp.go.jp/nin/

Immune Regulation

Lecture (Code:7361, 1styear:6units)
Practice (Code:7362, 2ndyear:4units)
Lab (Code:7363, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Hajime KARASUYAMA, Research Associates: Yohei KAWANO, and Soichiro YOSHIKAWA
Contact person: Hajime KARASUYAMA E-mail: karasuyama.mbch@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Lectures are given regarding the front line researches on molecular mechanisms underlying the development and activation of immune cells as well as their functions *in vivo*. In particular, lectures focus on the latest topics about the roles of basophils in protective immunity and allergic reactions, the engineered animal models of allergy, and the *in vivo* imaging of allergic reaction.

Available programs:

Lecture: to be announced
Special Lecture: as required
Journal Club: weekly
Progress meeting: weekly

Practice

Goals/Outline:

Access to and analysis of the database related to immunology, including DNA and protein sequences, and their 3D-structure.

Lab

Goals/Outline:

-Analyze the molecules involved in the differentiation, activation and migration of basophils *in vitro* and *in vivo* by using biochemical and genetic approaches.
-Establish engineered animal models of allergic disorders, and understand the cellular and molecular mechanism of their pathogenesis to develop novel strategy for preventing and treating diseases.

3. Format:

In a small group, with extensive discussion and bench works.

4. Venue:

To be announced

5. Grading:

Evaluating the planning of experiments, the progress in the planned experiments, the presentation of data in the progress meeting, and the discussion during lectures and practice.

Molecular Virology

Lecture (Code:7371, 1styear:6units)
Practice (Code:7372, 2ndyear:4units)
Lab (Code:7373, 2nd-～3rdyear: 8 units)

1. Instructors:

Shoji Yamaoka, Professor; Hiroaki Takeuchi, Assistant Professor; Yasunori Saitoh, Assistant Professor; Ryuta Sakuma, Assistant Professor; Shin Uota, Assistant Professor.

Contact person: Shoji Yamaoka E-mail: shojmmb@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline: Learn the latest progress in the basic and clinical research of virology from the molecular and immunological view points.

Available programs:

Lecture not fixed.

Special Lecture not fixed.

Journal Club Every Tuesday, from 12:00.

Conference Every Saturday, from 10:30.

Practice

Goals/Outline: Understand experimental procedures for virology, bacteriology, immunology and molecular cell biology to prepare research article.

Available programs: not fixed.

Lab

Goals/Outline: Learn and acquire experimental procedures and techniques. Special attention will be paid to handling pathogens. Evaluate experimental results and plan new experiments.

Available program: not fixed.

3. Format:

No more than 10 students will be allowed to join the lectures so that students are encouraged to join discussion.

4. Venue:

On the 17th floor of M&D Tower

5. Grading:

Students will be evaluated comprehensively on the basis of his/her participation and progress in research

6. Notes:

The number of students joining the journal club or conference will be limited to 10.

Immunotherapeutics

Lecture (Code:7381, 1styear:6units)
Practice (Code:7382, 2ndyear:4units)
Lab (Code:7383, 2nd-～3rdyear: 8 units)

1 .Instructor

Professor: Mari KANNAGI
Associate Professor: Takao, MASUDA
Asistant Professor: Atsuhiko, HASEGAWA ・ Amane, SASADA
Postdoctoral fellow: Ayako TAKAMORI
(Contact person: M. Kannagi, E-mail kann.impt@tmd.ac.jp)

2. Lecture

【Outline】 Our research area is in between clinical and basic science, involving immunology, microbiology, and molecular biology. We participate in education for undergraduate medical students in basic immunology and a part of clinical immunology. For graduate students, we provide opportunities to research mechanisms of infectious diseases and develop immunological therapeutics.

【Programs】Seminars including journal club and progress report on every Monday and Wednesday (12:30-14:30).

3. Practice and Laboratory Work

【Outline】 We investigate the disease mechanisms of human retroviral infection, such as AIDS caused by human immunodeficiency virus type 1 (HIV-1) and adult T-cell leukemia (ATL) caused by human T-cell leukemia virus type I (HTLV-I). These diseases are not simply explained by the direct pathogenic effects of the viruses, but influenced by a complex interplay between viruses and the host immune system. The aim of our research is the understanding disease mechanisms and the development of prophylactic and therapeutic strategies in these viruses infection. In order to conduct experiments of this area, students will be trained for tissue culture, immunological methods, molecular biological methods, and handling infectious materials and animals.

4. Research Subjects

1. Analysis of immunological risks for ATL development in HTLV-I-carriers.
2. Development of anti-tumor vaccine using experimental animal model for ATL.
3. Immunological and molecular mechanism of HTLV-1 induced leukemogenesis.
4. Molecular mechanism of HIV replication especially related to HIV-1 integrase.
5. Immunological suppressive mechanisms on HIV-1 replication.

5. Format

Personal instruction by the supervisor, and total discussion at a seminar.

6. Venue

Office and laboratory at the M & D tower 17 th floor.

Cellular and Environmental Biology

Lecture (Code:7391, 1styear:6units)
Practice (Code:7392, 2ndyear:4units)
Lab (Code:7393, 2nd-～3rdyear: 8 units)

1. Instructors:

MASAYUKI HARA, Ph.D.
Associate Professor
Contact person: Masayuki Hara E-mail mhara.ric@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The organism has been influenced by the environment, has been adapted for the environment, has formed the environment, and has evolved. The organism exists as a part of earth environment, and it is thought that each structure and function of an organism is necessary for the survival plan against the environment. The interaction of each cell in a multicellular organism and the microenvironment on which it was put is not exceptional including the process of differentiation. In order to understand the response and adaptation of an organism (cell) against an environmental alteration, the interaction mechanisms are explained.

Available programs:

Lecture	Anytime
Special Lecture	Anytime
Seminar	Anytime
Journal Club	Friday 10:00-11:00

Practice

Goals/Outline:

In advancing a study, we discuss about the following; (1) examination of the related paper, and extraction of controversial points, (2) evaluation against the performed experimental procedure, (3) reliability of the experimental results, and (4) concluded points. Furthermore, we plan an experimental design about the new direction drawn from the discussion, and examine the validity.

Available programs:

Research Conference	Friday 11:00-12:30

Lab

Goals/Outline:

In this department, the experimental approaches from biochemistry, molecular biology, and cell biology are mainly performed. Therefore, these procedures must enough become skilled, simultaneously must be understood about the principle.

Available program:

Participation in a research group	Anytime

3. Format:

It is performed in an individual or a seminar form for few students.

4. Venue:

It is mainly performed in the department.

5. Grading:

It is comprehensively performed based on the details of the research and the attend state to lectures, practice, and experiments.

Biodefense Regulation

Lecture (Code:7401, 1styear:6units)
Practice (Code:7402, 2ndyear:4units)
Lab (Code:7403, 2nd-～3rdyear: 8 units)

1. Instructors:

Toshiaki Ohteki Professor, Nobuyuki Onai Junior Associate Professor, Hiroyuki Tezuka Assistant Professor
Contact person: Toshiaki Ohteki E-mail ohteki.bre@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Immune responses to antigenic stimulation are not simply for the protection against invading pathogen, but rather an essential system for the maintenance of homeostasis in the body. Based on the background, this course deal with immune cells playing a role in the host defense and maintenance of homeostasis, and introduce up-to-date information on differentiation and function of immune cells and related disorders.

Available programs:

Lecture	at any time
Special Lecture	at any time
Seminar	at any time

Practice

Goals/Outline:

This course deal with the latest research papers related to Immunology and experimental data. Students are expected and discuss the novelty and points remaining unsolved in these papers and the data weekly presented by themselves with supervisors in terms of their technical accuracy, immunological meaning, and future experimental design.

Available programs:

Progress Report	Saturday 10:00 a.m.-11:00 a.m.
Journal Club	Saturday 11:00 a.m.-12:30 p.m.

Lab

Goals/Outline:

Students are expected to learn the techniques to prepare immune cells from various tissues of normal, transgenic, and gene-targeting mice, and manipulate differentiation and function of immune cells *ex vivo* and *in vivo*.

3. Format:

Individual training

4. Venue:

Contact your supervisor.

5. Grading:

Attendance, Reports, and Final examination.

6. Notes:

None

Pathological Cell Biology

Lecture (Code:7411, 1styear:6units)
Practice (Code:7412, 2ndyear:4units)
Lab (Code:7413, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Shigeomi Shimizu, Associate professor: Norio Shimizu, Assistant professor: Satoko Arakawa, Tatsushi Yoshida
Contact person: Pathological Cell Biology, Shigeomi Shimizu
E-mail shimizu.pcb@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The lecture explains basic pathways of life phenomena causing variety of disease from the points of molecular, cellular, or organism level. Concretely, the lecture explains cell growth, cell death and cell division that are responsible for development, homeostasis, and disease based on these abnormalities. In virus treatment, we explained the molecular mechanisms of continuous infection of EB virus and HIV type I virus, and also explained the novel virus treatment.

Available programs:
Lecture: occasion demands
Special Lecture: occasion demands
Seminar: occasion demands

Practice

Goals/outline:

The practice examines research papers about physiological and pathlogical cell function, especially focusing cell death and autophagy. The practice also studies strategies in life science research by a research drafting for investigation of cell function and its abnormality, analyses of results and simulations of discussion.

Available programs:
Presentation once a week
Journal club once a week

Lab

Goals/outline:

The lab focuses on the acquisition of experimental techniques such as analyses of gene-targeting mice, analytic methods of cellular and organellar function. We also focus on the practice of research drafting. In virus treatment, we focus on the acquisition of techniques for detection of EB virus and HIV type I virus. Methods of cell culture for virus detection are also acquired.

3. Format:

Lecture is done by individual guidance or seminar for a few students. Lab is done by individual guidance.

4. Venue:

Venue is changed depending on the program. Please ask Instructors.

Immunology

Lecture (Code:7431, 1styear:6units)
Practice (Code:7432, 2ndyear:4units)
Lab (Code:7433, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Prof. Takeshi Tsubata E-mail tsubata.imm@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The aim of this course is to make the students understand basic mechanisms of immune responses and the methods for immune regulation.

Available programs:

Lecture to be announced

Special Lecture to be announced

Seminar to be announced

Practice

Goals/Outline:

The aim of this course is to make the students acquire ability to plan experiments on immunological studies, and address the data.

Available programs:

Group meeting Thursdays 9:30-11:00
Fridays 9:30-11:00

Lab

Goals/Outline:

The aim of this course is to make students acquire ability to experimentally address immune responses

Research projects are done to understand the immune system and to develop new methods for immune regulation.

3. Format:

Lecture, group discussion and experiments

4. Venue:

Conference Room, MD tower 21 F, and Laboratory, MD tower 21 F

5. Grading:

Attendance and quality of presentations

6. Notes:

N/A

Pediatrics and Developmental Biology

Lecture (Code:7411, 1styear:6units)
Practice (Code:7412, 2ndyear:4units)
Lab (Code:7413, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Shuki Mizutani, Associate Professor: Tomohiro Morio,
Specially Appointed Professor: Shozaburo Doi,
Specially Appointed Associate Professor: Kosuke Imai,
Junior Associate Professor: Masatoshi Takagi, Kenichi Kashimada,
Assistant Professor: Yaeko Motoyoshi
Contact person:Shuki Mizutani E-mail smizutani.ped@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The students will learn normal development and organogenesis during fetus/infants/children, and the disorders caused by abnormal differentiation or development of the organs. The students will understand physiology in childhood and molecular pathogenesis of the childhood diseases.

Available programs:

Lecture	Pediatrics	As needed basis
Special Lecture	2-3 / year	As needed basis
Seminar	Monday Seminar	17:00-18:00 Monday
Journal Club	Journal Club	17:00-18:30 Tuesday
Conference	Morning Conference	8:00-8:45 Monday-Friday
	Hem/Onc Meeting	8:45-9:45 Wednesday
	Progress Report	17:00-18:30 Tuesday

Practice

Goals/Outline:

The students will acquire skills and knowledge to examine, evaluate, and treat the childhood patients, through lectures and practices.

Available programs:

Morning Conference	8:00-8:45 Monday-Friday
Clinical Round	16:30-17:30 Monday
	14:00-16:00 Wednesday
Pediatric Hematology/Oncology/Immunology	8:45-9:45 Wednesday
Pediatric Nephrology	19:00-21:00 the 2nd Thursday of the month
Pediatric Cardiology	19:00-21:00 the 3rd Friday of the month
Pediatric Neurorogy	19:00-21:00 the 4th Tuesday of the month

Lab

Goals/Outline:

The students will acquire the basic knowledge and skills in cellular biology, molecular biology, cellular morphology, and physiology in the following programs.

Available programs (The student will be assigned to one of the following programs):

#1 Pediatric Hematology/Oncology
Keywords: Childhood malignancy, DNA damage response, Cell cycle checkpoint, Hematopoietic stem cells,

#2 Pediatric Immunology
Keywords: Primary Immunodeficiency, B cell development, Class switch recombination, Protein & Gene therapy

#3 Pediatric Cardioangiology
Keywords: Pulmonary hypertension, Pulmonary vascular disorders, Electrophysiology

#4 Pediatric Neurology
Keywords: DNA damage response and its defect (Ataxia telangiectasia), Sleep disorder

#5 Neonatology
Keywords: Periventricular leukomalacia, Bronchopulmonary dysplasia, neonatal vascular system

3. Format:

Seminar will be carried out in a small group. Each participant will be assigned to one project and will have instruction from the assigned tutor.

4. Venue:

Conference room at the 8th floor (A8) of the Medical Hospital.
Postgraduate seminar room at the 9th floor of M&D tower.

5. Grading:

Grading will be done by assessing knowledge, laboratory performance, ability to design experiments, and skills of presentation,

6. Notes:

Guidance and instruction can be done in English.

Medicine and Rheumatology

Lecture (Code:7451, 1styear:6units)
Practice (Code:7452, 2ndyear:4units)
Lab (Code:7453, 2nd-～3rdyear: 8 units)

1. Instructors:

Associate professor: Hitoshi Kohsaka, M.D., Ph.D.
Contact person: Hitoshi Kohsaka, M.D., Ph.D. E-mail kohsaka.rheu@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Understanding molecular and cellular pathology and treatment of rheumatic diseases

Available programs:

Lecture when necessary

Special Lecture when necessary

Seminar when necessary

Journal Club every other Thursday evening

Conference every Thursday evening

Practice

Goals/Outline:

Familiarizing how pathology of rheumatic diseases is investigated for development of new treatments.

Available programs:

Participation in research studies and clinical studies.

Lab

Goals/Outline:

Investigating pathology of rheumatic diseases for development of new treatments.

Available program:

Participation in research studies and clinical studies.

3. Format:

Small group meeting

4. Venue:

M&D Tower 13th floor

5. Grading:

Comprehensive grading based on the performance

6. Notes:

10 students at maximum

Dermatology

Lecture (Code:7461, 1styear:6units)
Practice (Code:7462, 2ndyear:4units)
Lab (Code:7463, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor and Chairman: Hiroo Yokozeki
Assistant Professor: Ken Igawa, Kaoru Takayama , Aya Nishizawa
Contact person: Ken Igawa E-mail: 3064derm@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

To understand a structure, function, imuunological roles, biological roles of the skin
To understand the pathophysiological mechanism of skin diseases

Available programs:

Lecture April to July 12 times rectures

Special Lecture July, December: Yushima Danwa kai
April: skin allergy study recture

Seminar

Journal Club Tuesday PM 4:00-5:00

Conference Research conference: Monday PM 5:00-5:30

Practice

Goals/Outline:

To practice how to make a diagnosis of skin diseases by clinical and pathological examination.

8 : 00—8 : 30

Available programs:

Clinical conference every Thursday 1:30-6:00

Lab

Goals/Outline:

General:

Etiological and immunological mechanisms of cutaneous allergic responses.
Establishment of a potent therapeutic approach for treatment-resistant allergic skin diseases.

Research projects:

1. Biological significance of prostaglandin D2 and its receptors in skin inflammation.
2. Mechanisms of eosinophil and basophil infiltration to the skin.
3. Biosynthesis of prostanoids in basophils and contribution to skin diseases.
4. Therapeutic approach for atopic dermatitis with STAT6 siRNA.
5. Stable form of galectin-9 as a novel therapeutic tool for psoriasis.
6. Analysis of scratching behavior in mouse model of skin inflammation.
7. Development of potent therapeutic tools for a mouse model of angiosarcoma
8. Epidermal sheets induced by iPS cells

Available program:

N/A

3. Format:

Conducting research as a member of the laboratory. A small group meeting will be held periodically to have discussions with instructors.

4. Venue: N/A

5. Grading:

Total grading score is to be assessed based on one's enthusiasm for science, experimental skills, and scientific quality of manuscript submitted for publication.

Human Pathology

Lecture (Code:7471, 1styear:6units)
Practice (Code:7472, 2ndyear:4units)
Lab (Code:7473, 2nd-～3rdyear: 8 units)

1. **Instructors:**
Contact person: Yoshinobu EISHI E-mail eishi.path@tmd.ac.jp

2. **Course Description and Timetable**

Lecture
Goals/outline:
Understanding processes of pathological diagnosis for specimens obtained by biopsy, operation, and autopsy, and learning histological methods for researches
Available programs:

Lecture	from time to time
Special lecture	from time to time
Seminar	from time to time
Journal Club	Thursday 19:00 – 22:00
CPC	Tuesday 17:00 – 19:00

Practice
Goals/outline:
Practice for preparation of pathology reports and an autopsy report with several biopsy and operation materials and an autopsy case of interest.
Available programs:

Case study in Esophageal Endoscopy	Thursday 18:30 – 19:30
Case study in Pulmonology	Wednesday 17:00 – 18:30
Case study in Breast Surgery	1st Monday 18:30 – 20:30
Case study in Neurosurgery	2nd Monday 18:30 – 20:30
Case study in Gynecology	3rd Monday 18:30 – 20:30
Case study in Dermatology	4th Monday 18:30 – 20:30

Lab
Goals/outline:
Observational training of histological methods for researches
Available programs:
To be involved in research groups when necessary.
A short training course for the methods listed below.
1) Preparation of histological sections
2) Immunohistochemistry
3) DNA extraction from paraffin sections
4) In situ hybridization for paraffin sections
5) Real-time PCR including RT-PCR
6) Flow cytometry for lymphocytes
7) Double-colored immunofluorescence
8) Preparation of monoclonal antibodies for paraffin sections

3. **Format:**
Discussion in a small group with histological slides and microscope when necessary.

4. **Venue:**
Depending to the program. Confirm to lecturers before the program.

5. **Grading:**
Submit summary for the conference (at least 3 times) held in Thursday

6. **Notes:**
No limit for participants, but in a small group composed of five students or less.

Molecular Cellular Cardiology

Lecture (Code:7491, 1styear:6units)
Practice (Code:7492, 2ndyear:4units)
Lab (Code:7493, 2nd-~3rdyear: 8 units)

1. Instructors:

Professor TetsushiFurukawa Assistant Professor Yusuke Ebana
Contact person: Tetsushi Furukawa, E-mail: t_furukawa.bip@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

You will learn pathogenesis for cardiovascular diseases including fetal arrhythmias, sudden cardiac death, and gender difference through lecture and discussion. The goal is to obtain knowledge, with which you will proceed your own research project.

Available programs:

Lecture TBA
Special Lecture TBA
Seminar once a week, every Tuesday 17:00-18:30
Research conference once a week, every Tuesday 10:00-11:00
Journal Club once a week, every Friday 17:00-19:00

Practice

Goals/Outline:

You will learn pathogenesis for cardiovascular diseases including fetal arrhythmias, sudden cardiac death, and gender difference through experiment and practice. The goal is to obtain technique, with which you will proceed your own research project.

Lab

Goals/Outline:

Using multi-disciplinary approach including molecular, genetic, and electrophysiological techniques, we will study unproven important cardiovascular theme shown below.

Available program: as occasion demands

Participation in a research group

(1) Personalized medicine for cardiac arrhythmias (especially atrial fibrillation and sudden death)
(2) Basic research for gender-specific medicine in cardiovascular diseases
(3) Use of human ES- and iPS-derived cardiomyocytes for arrhythmia research
-Screening system of drug effects and toxicities
-Establishment of diseased model cardiomyocytes
(4) State-of-art technology for arrhythmia researches
-Motion vector technology for cardiomyocyte function assay
-Basic research for 3-D simulator of cardiac electrical activity using super-computer

3. Format:

In general, it will be held with few attendances. We will encourage question and discussion to promote interaction between lecturer and attendances.

4. Venue:

It will be held in seminar room in M&D tower, which will be announced in time.

5. Grading:

It will be given depending on the research report and/or presentation in scientific meeting.

Stem Cell Regulation

Lecture (Code: 7511, 1st year: 6 units)
Practice (Code: 7512, 1st-~2nd year: 4 units)
Lab (Code: 7513, 2nd-~3rd year: 8 units)

1. Instructors:

Professor Tetsuya Taga, Associate Professor Tetsushi Kagawa, Associate Professor Ikuo Nobuhisa, and Project Assistant Professor Kouichi Tabu

Contact person: Prof. Tetsuya Taga E-mail: taga.scr@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

This course will introduce to students the recent topics in the research field of stem cell regulation. Tissue stem cells possess potential to generate all cell types present in a given tissue. In order to understand tissue development and regeneration from the biological and clinical viewpoints, it is important to study the molecular regulation of stem cell maintenance and fate specification. Not only normal tissue stem cells, e.g. neural and hematopoietic stem cells on which we place particular focus, but also cancer stem cells will be discussed to consider the problem of cancer recurrence. We will refer to cell-extrinsic signals like growth factors and cell-intrinsic program such as epigenetic modifications as cell fate regulatory elements.

Available programs:

Lecture as occasion offers

Special Lecture as occasion offers

Seminar as occasion offers

Research Meeting 13:00 ~ 14:30 on every Thursday

Practice

Goals/Outline:

In this course, students will learn the molecular basis of stem cell regulation in view of cell-extrinsic signals and cell intrinsic-programs during tissue development, maintenance, and regeneration from molecular to whole-body levels. Students will receive exposure to cutting edge concepts and research technologies, and study regulatory mechanisms in neural, hematopoietic and cancer stem cells from multiple viewpoints. With emphasis also on physiological and pathological conditions surrounding the stem cells, the course aims to improve student's understanding of stem cells.

Available programs:

Progress Report when called for and by consultation

Workshop 14:30 ~ 16:00 on every Thursday

Lab

Goals/Outline:

Each student will conduct independent research, under supervision of instructors, on regulatory mechanisms of either the neural, hematopoietic, and cancer stem cells. Other tissue stem cells can be tackled by consultation. Students are advised to design experiments regarding, for example, stem cell development, maintenance of multipotentiality, cell-fate specification, cell migration, maturation, maintenance, and regeneration. Through execution of such experiments, students shall understand general property of stem cells in both/either physiological and/or pathological conditions and obtain a hint for going into translational research.

Available program:

Participation to the research groups by consultation

3. Format:

Programs are set up for a small number of students for more intense discussion and in-depth participation.

4. Venue:

The venue should be confirmed by contacting instructors before attendance. It varies depending on the programs.

5. Grading:

Grading will be undertaken based on lecture/practice/lab participation, performance, presentation, and lab work execution.

6. Notes:

None.

Molecular Pharmacology

Lecture (Code:7521, 1st year:6units)
Practice (Code:7522, 2nd year:4units)
Lab(Code:7523, 2nd-~3rd year: 8 units)

1. Instructors:

Professor: Masaki Noda, Associate Professor: Yoichi Ezura.
Contact person: Masaki Noda in Molecular Pharmacology.
email: noda.mph@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Scientific bases for the research that contribute to the establishment of therapy and prevention for osteoporosis and the other calcium-related disorders will be provided. These basesareforelucidationofmolecularmechanismsunderlyingregulationofcalcium metabolism. Skeletal system is the largest storage site for calcium in a living body and its metabolism is controlled by a complexity of cell populations consisting of bone-forming osteoblasts and bone-resorbing osteoclasts as well as stromal cells and chondrocytes. In our department, we take molecular and cellular biological approaches to study (i) the mechanisms of regulation of the development, differentiation, and function of each group of these cells; (ii) interaction between cells, organs, and the cells and extracellular matrix molecules; (iii) biochemical and biological properties of extracellular matrix molecules and signaling molecules including cytokines and hormones. We aim at elucidating molecular pathology of the disease caused by dysfunction of calciumhomeostasis. We will also provide current information regarding the basis and application of this research on skeletal diseases.

Courses available

Graduate lecture	on occasion
Graduate special lecture	on occasion

Practice

Goals/Outline:

To learn the function of molecules involved in calcium regulation through experiments and seminars. In addition to obtaining technical skills, practical training would be given to learn how to propose research plans, interpret results, and understand integrated research.

Available programs:

Graduate tutorial	on occasion
Bone biology seminar	on occasion
Graduate seminar	8:30~9:20 every Tuesday
Molecular biology seminar	8:30~9:20 every Friday
Research progress meeting	8:30~9:20 every Monday&Thursday

Lab

Goals/Outline:

Experiments to reveal function of molecules in an organism involved in regulation of calcium metabolism, Molecular biological approach will be the base. In vivo and in vitro experiments using osteoblasts, osteoclasts, knockout mice, and transgenic mice will be performed.

Available program:

Molecular pharmacology experiment
Cell biology experiment
Molecular biology experiment
Molecular embryology experiment

3. Format:

Seminar
Lecture
Presentation and discussion

4. Venue:

M&D tower 24th floor

5. Grading:

Comprehensive evaluation

Molecular Cell Biology

Lecture (Code:7531, 1styear:6units)
Practice (Code:7532, 2ndyear:4units)
Lab (Code:7533, 2nd-～3rdyear: 8 units)

1. Instructors:

Assistant professor: Toshiyasu Goto
Professor: Hiroshi Shibuya
Contact person: Department of Molecular Cell Biology, Hiroshi Shibuya,
TEL 03-5803-4901
E-mail shibuya.mcb@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

This course explains the mechanisms of cellular function in morphogenesis and tissue genesis based on the signal transduction pathway.

Available programs:

Lecture	as the occasion demands.
Special Lecture	as the occasion demands.
Seminar	as the occasion demands.
Journal Club	Monday 10:00-12:00.

Practice

Goals/Outline:

This course focuses on the mechanisms of cellular function in morphogenesis and tissue genesis based on the signal transduction pathway. It contains preparation and discussion for reading and writing the related research papers.

Available programs:

Conference	Friday 9:00-11:00
Discussion	as the occasion demands.

Lab

Goals/Outline:

For understanding the mechanisms of cellular function in morphogenesis and tissue genesis based on the signal transduction pathway, graduate students have actual experiences about research planning, advanced technology and discussion of study.

Available program:

Participation in research group	as the occasion demands.
The experiments of Molecular Cell Biology	5 days / year 13:00-16:00

The outlines:
1) Analysis of gene expression at the level of nucleic acids and proteins.
2) Analysis of the interaction of signaling molecules.
3) Analysis of cell differentiation using the cell culture system.
4) Analysis of tissue sections by immunohistochemistry.

3. Format:

Small group instruction is held as possible to allow students to participate frequently in discussions.

4. Venue:

Since the venue is depended on programs, please confirm the venue to the course instructor before classes.

5. Grading:

The evaluation is based on the content in lecture, practice and research program. The participation (attendance) situation is also evaluated.

6. Notes:

NA

Epigenetics

Lecture (Code:7551, 1styear:6units)
Practice (Code:7552, 2ndyear:4units)
Lab (Code:7553, 2nd-~3rdyear: 8 units)

1. Instructors:

Associate Prof. Takashi KOHDA, Assistant Prof. Ryuichi ONO
Assitant Prof.(Tokunin), Mie NARUSE,
Contact person: Prof. Fumitoshi ISHINO E-mail fishino.epgn@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Both genetics and epigenetics are the basics of biology to understand higher-order life phenomena. Epigenetics explains how gene expression is regulated during development and growth coupled with gene regulatory network. Our goals are to understand the mechanism of mammalian development including genomic imprinting, and to evaluate the risk for newly developing regenerative technologies using somatic cloning and iPS cells in medical application.

Available programs:

Lecture Request detail information on dates and place

Special Lecture Request detail information on dates and place

Practice

Goals/Outline: Read published papers including classics to the latest one on epigenetics and discuss contents.

Available program:

Seminar Request detail information on dates and place

Journal Club Every Monday 10:00-12:00

Conference Request detail information on dates and place

Available programs:

Request detail information on dates and place

Lab

Goals/Outline:

- To get good skill for recombinant DNA experiment including DNA sequencing and DNA methylation analysis
- Production of iPS cells

Available program:

Request detail information on dates and place

3. Format:

Lecture, Practice & Lab.

4. Venue:

Request detail information on dates and place

5. Grading:

Attendance (50 %), Reports (50 %)

6. Notes:

Students can take two or three lectures in the first semester.

Chronobiology

Lecture (Code:7561, 1styear:6units)
Practice (Code:7562, 2ndyear:4units)
Lab (Code:7563, 2nd-~3rdyear: 8 units)

1. Instructors:

Associate Professor Jun Hirayama Assistant Professor Yoichi Asaoka
Contact person:Hiroshi Nishina E-mail nishina.dbio@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

You will learn signal transduction of murine and fish development through lecture and discussion. The goal is to obtain knowledge, with which you will proceed your own research project.

Available programs:

Lecture TBA
Special Lecture TBA
Seminar TBA
Journal Club once a week, every Thursday 10:00-12:00
Conference once a week, every Thursday 10:00-12:00

Practice

Goals/Outline:

You will learn signal transduction of murine and fish development through experiment and practice. The goal is to obtain knowledge, with which you will proceed your own research project.

Lab

Goals/Outline:

Using multi-disciplinary approach including molecular and genetic techniques, we will study unproven important developmental theme shown below.

Available program: as occasion demands

Participation in a research group

(1) Physiological roles of JNK signaling pathway
(2) Physiological roles of Hippo signaling pathway
(3) Mutations affecting liver development and function in Medaka, Oryzias Latipes

3. Format:

In general, it will be held with few attendances. We will encourage question and discussion to promote interaction between lecturer and attendances.

4. Venue:

It will be held in seminar room in M&D tower, which will be announced in time.

5. Grading:

It will be given depending on the research report and/or presentation in scientific meeting.

Stem Cell Biology

Lecture (Code:7571, 1styear:6units)
Practice (Code:7572, 2ndyear:4units)
Lab (Code:7573, 2nd-~3rdyear: 8 units)

1. Instructors: Professor Emi Nishimura, Assistant Professor Takahiro Aoto, (TT) Assistant Professor Hiroyuki Matsumura

Contact person: Prof. Emi Nishimura E-mail nishscm@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Our goal is to understand the mechanisms of tissue homeostasis driven by stem cell systems and to apply the knowledge to better understand the mechanisms underlying the tissue decline, cancer development and other diseases associated with aging. We will discuss how stem cells including both tissue stem cells and cancer stem cells are generated and maintained in tissues and apply the knowledge to regenerative medicine and treatment of cancer and other diseases.

Available programs:

Lecture and Special Lecture : To be announced by E-mail
Seminar : To be announced by E-mail

Practice

Goals/Outline:

The purpose of our Journal Club is to introduce Stem Cell Biology and Cancer Biology to participants by providing an opportunity to read, present, and discuss some noteworthy papers of high impact and quality in the field. We will aim to distinguish what is known from what is not known, and determine what should be done next. Students will learn how to plan experiments, how to analyze and interpret the results.

Available programs:

Journal Club 0:30-1:30 PM on Monday
Progress Report 9:30-11:00 AM on Monday

Lab

Goals/Outline:

The purpose of our Lab is to provide an opportunity to learn *in vivo* and *in vitro* analysis of tissue stem cells from genetically modified mice. The techniques include immunohistochemical staining, histological analysis, FACS analysis and generation of transgenic mice.

Available program:

Hands-on Lab: To be announced by E-mail

3. Format:

Seminar & Hans-on Lab

4. Venue:

To be announced by E-mail

5. Grading:

Attendance (50%), Reports (50%)

Respiratory Medicine

Lecture (Code:7581, 1styear:6units)
Practice (Code:7582, 2ndyear:4units)
Lab (Code:7583, 2nd-~3rdyear: 8 units)

1. Instructors:

Professor: Naohiko Inase
Contact person: Naohiko Inase E-mail: ninapulm@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Integrated pulmonology deals with a variety of pulmonary diseases including tumors, infectious diseases, allergic diseases, non-allergic inflammatory diseases, and genetic disorders. Main objective of integrated pulmonology in the graduate course is to provide students to study specific diagnostic modalities as well as basic scientific findings regarding the pathogenesis of pulmonary diseases.

Available programs:

Lecture	any time
Special Lecture	as required
Seminar	as required
Journal Club	Saturday, 8:00 am
Conference	Saturday, 9:00 am

Practice

Goals/Outline:

Integrated pulmonology clinic provides a full spectrum of diagnosis and treatment of a variety of pulmonary diseases. Consultant system is open to all departments in this hospital and daily clinical conference regarding inpatients is organized by professors of the department. In outpatient clinic, chemotherapy, home oxygen therapy, support for ceasing smoke, management of sleep apnea, and arrange of clinical studies are provided.

Available programs:

Conference of Pulmonary Medicine	Every weekday, 8:30 am
Round for in-patients	Thursday, 9:00 am
Joint conference of Surgery &Pathology	Wednesday, 5:00 pm

Lab

Goals/Outline:

1) Pathogenesis of hypersensitivity pneumonitis and detection of environmental causative antigen
2) Airway remodeling in bronchial asthma model
3) Acute exacerbation in pulmonary fibrosis
4) Proteomics of pulmonary fibrosis associated with collagen vascular disease
5) Pathogenesis of pulmonary fibrosis and emphysema

Available program:

Lab meeting	any time

3. Format:

After reviewing a variety of pulmonary diseases and the latest topics, pathogenesis of each pulmonary disease will be discussed.

4. Venue:

M&D tower, north

5. Grading:

By participation to the conference, routine bench work, and results of each study

6. Notes:

Students who have interest in pulmonary medicine are welcome to join us.

Gastroenterology and Hepatology

Lecture (Code:7591, 1styear:6units)
Practice (Code:7592, 2ndyear:4units)
Lab (Code:7593, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor Mamoru Watanabe
Contact person: Kiichiro Tsuchiya E-mail dept.gast@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Research project is selected from the clinical problems in the Gastroenterology and Hepatology to understand the research policy, as clinical science that the results of research project finally should be restored to clinical medicine.

Available programs:

Lecture	any time
Special Lecture	any time
Seminar	any time
Journal Club	every Tuesday 18:00~19:30
Research Conference	every Tuesday 18:00~19:30

Practice

Goals/Outline:

To cultivate the awareness of the issues that the subject of basic research is awaken from medical practice through learning the fundamental knowledge such as endoscopic technique and clinical information of gastroenterology.

Available programs:

Clinical conference	every Tuesday 7:30~8:30
Endoscopic examination	every Tuesday, Thursday, Friday
X-ray examination	every Wednesday
Abdominal echo examination	every Monday, Friday

Lab

Goals/Outline:

To get novel knowledge by basic research raised from clinical practice.

Available program:

Mucosal immunology
Digestive regeneration
Hepatitis
Liver regeneration

3. Format:

Different with each course.

4. Venue:

Different with each course.

5. Grading:

Different with each course.

6. Notes:

We prepare many opportunities for the study abroad.

Surgical Oncology

Lecture (Code:7601, 1styear:6units)
Practice (Code:7602, 2ndyear:4units)
Lab (Code:7603, 2nd-～3rdyear: 8 units)

1. **Instructors**: Professor, Kenichi Sugihara; Professor, Kazuyuki Kojima (Minimally Invasive Surgery); Associate Professor, Hiroyuki Uetake (Translational Oncology)
Contact person: Satoru Iida E-mail s-iida.srg2@tmd.ac.jp

2. **Course Description and Timetable**

Lecture

Goals/Outline:

Surgery for cancers of the stomach, the colon and rectum and the breast is the most important tool, but recently chemotherapy has achieved great advance. In order to establish the strategy how to eradicate cancers, it is important to elucidate the mechanism of development and progression of cancers. The latest findings on surgical oncology are reviewed. The most effective therapy for nonresectable cancers is reviewed in view of a multidisciplinary treatment approach. Surgical treatment for cancers often complicates physiological dysfunctions in digestion ,absorption, defecation, sexual intercourse and urination, resulting in impairing post-operative QOL. The students take the lectures about anatomy and physiology of the digestive organs and the breast to acquire the knowledge required to prevent a decline in QOL.

Available programs:

Lecture: As necessary

Special Lecture: As necessary

Seminar: As necessary

Journal Club: Every Thursday, 15:00 - 16:30

Research Conference: Every Thursday, 15:00 - 16:30

Practice

Goals/Outline:

The goals of the practice in this course are as follows:

1) Understanding the procedures of diagnosis of cancers of the gastrointestinal tract and the breast.
2) Selecting the most appropriate treatment approach including surgical resection and chemotherapy based on the staging and patient survival.
3) Preventing the physiological and neurological dysfunction complicated tfter surgery.

Available program

Clinical Round: Monday and Thursday, 9:00 – 10:00. Tuesday, Wednesday and Friday, 8:00-9:00
Pre-operative Conference: Every Thursday, 7:30 – 9:00
Post-operative Conference: Every Monday, 7:30 – 9:00
Clinical Conference: Upper GI, every Monday, 17:30 – 20:00;
Clinical conference: the colon and rectum, every Wednesday, 17:30 – 20:00; Clinical conference: the breast, every Friday, 18:00 – 19:00

Lab

Goals/Outlines:

1) Development of novel therapeutics for gastrointestinal and breast cancers by elucidating invasion/metastasis mechanisms of cancer.
2) Identification of genes involved in gastrointestinal carcinogenesis by comprehensive analysis of mRNA and genomic DNA
3) Identification of predictive factors for response to chemotherapeutic agent and application of these findings to individualized medicine.
4) Development of the radical operation without dysfunction by clarifying the involvement of the automatic nerves in gastrointestinal motility, digestion and absorption, urination and ejaculation.
5) Development of less invasive operation for cancer of the stomach, the colon and rectum, and the breast.

Available program:
Participation in a research group: As necessary

3.Venue:

Operative Conference, B-5 conference room; Clinical Conference, A-9 conference room

4.Grading:

1) Attendance to the lectures and the conferences
2) Contents of the research presentation
3) Contents of the article

The student is evaluated in consideration of the above three points.

Cardiovascular Medicine

Lecture (Code:7611, 1styear:6units)
Practice (Code:7612, 2ndyear:4units)
Lab (Code:7613, 2nd-～3rdyear: 8 units)

1. Instructors: Chairman, Mitsuaki Isobe Professor, Kenzo Hirao Assistant Professor, Hitoshi Hachiya

Contact person: Mitsuaki Isobe E-mail isobemi.cvm@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The rising epidemic of cardiovascular disease is fuelled by obesity, hypertension, diabetes and aging. Extensive research identified immunoinflammatory mechanisms as key drivers in the initiation and progression of the disease, from early asymptomatic stages of vascular and myocardial injury leading to the clinically manifest dysfunction and remodeling in advanced stages. Heart failure is the end stage of all cardiovascular diseases including arrhythmia, hypertension, myocarditis and others. We investigate the mechanisms of vascular and myocardial inflammation in cardiovascular disease. Besides, many clinical technique are required to treat both in-hospital and out-hospital patients, i.e PCI and ablation and implantation of ICD and CRT. Cardiac imaging (ultrasound, MRI, CT, PET, intracoronary imaging and others) is one of the most exciting and fast-developing area. Our aim of the lecture is to understand broad knowledge on the cardiovascular diseases from bench to bedside.

Available programs:

Lecture Periodically

Special Lecture Periodically

Seminar Periodically

Journal Club Tuesday evening every two weeks

Conference Tuesday evening every two weeks

Practice

Goals/Outline:

We can offer all techniques to treat patients from fundamental skills to new and challenging tecniques. For example, we are doing PCI, Ablation on many origins of arrhythmia, implantation of pacemaker/ ICD/ CRT. We also conduct non-invasive imaging and medical treatment of patients with cardiovascular diseases.

Available programs:

Morning conference : every day
Professor's round : every Friday
Electrophysiology meeting : every Tuesday evening
Coronary angiography meeting : every Friday

Lab

Goals/Outline:

We identify the mechanisms of cardiovascular diseases especially focusing on the inflammation with cardiac transplantation and myocarditis. Our investigation is based on deep interest and passion to contribute findings new treatments of heart disease. The targets of our investigation cover myocardial ischemia, cardiac rejection of the transplantation, myocarditis, heart failure, atherosclerosis, periodontal disease, pulmonary hypertension, atrial fibrillation, and so on.

Available program:

Molecular biology, Animal experiments, Electrophysiological study, Pathohistological analyses, Gene analyses are available.

3. Format:

Senior doctor coaches student individually as the best way in any case. We offer the student both clinical research and basic investigation.

4. Venue:

Appropriate location would be selected to study efficiently.

5. Grading:

You will be graded as multi-dimensional and appropriate way.

6. Notes:

We will provide whatever you need to study cardiovascular disease in clinical and basic ways.

Anesthesiology

Lecture (Code:7621, 1styear:6units)
Practice (Code:7622, 2ndyear:4units)
Lab (Code:7613, 2nd-~3rdyear: 8 units)

1. Instructors:

Contact person: Prof. Koshi Makita E-mail makita.mane@tmd.ac.jp
Associate Prof: Koichi Nakazawa, Junior Associate Prof: Tokujiro Uchida, Seiji Ishikawa, Jiro Kurata

2. Course Description and Timetable

Lecture

Goals/outline: Fostering the academic specialists with particular knowledge and skills in the areas related to our professional. In particular, aiming ①to acquire the knowledge and technology throughout the perioperative management patients with severe systemic impaired organ function, ②to clarify the mechanisms of general anesthetic action and pain chronification in the human central nervous system that will help to develop methods to monitor intraoperative awareness and to diagnose chronic pain, ③to invent new modality of artificial ventilation, pain management, and fluid management in patients undergoing thoracic surgery aiming to improve their outcome, ④to identify mechanisms behind postoperative acute kidney injury and invent new measures for prevention, diagnosis, and treatment.

Available programs:

Lectures & Special Lectures: Will be held according to an agenda

Seminar: Will be held according to an agenda

Journal Club & Conference : Every morning 8:00-8:30

Practice

Goals/Outline:

Acquiring various anesthetic methods for clinical use as well as the basic knowledge and skills for research. In addition, future educators in the field experience teaching practice for trainee doctors.

Available programs:

Initial training program of clinical anesthesia for necessary persons.

Lab

Goals/Outline:

~~1) Gathering evidences of RAGE as a possible lung injury marker and identification of physiological roles of RAGE.~~

~~2)~~ 1)Discovering most effective ventilation methods for injury lungs.

2) Therapeutic mechanism of mesenchymal stem cell for lung injury (rat and mouse model)

3) Studies on the central nervous system effects of general anesthetics by human electrocorticogram and functional neuroimaging.

4) Studies on the mechanisms of cerebral pain processing and pain chronification by human functional magnetic resonance imaging and positron emission tomography.

5) Studies on the effects of protective one-lung ventilation on ventilatory mechanics.

6) Epidemiologic studies to identify incidence of, and risk factors for postoperative acute kidney injury in patients undergoing liver resection.

7) Studies on the effect of anesthetics on the developing brain.

Available program:

Participation in research groups such as 1) best mechanical ventilation for injured lungs in animal models, 2) ~~lung injury and RAGE,~~ mesenchymal stem cell for lung injury 3) etc

3. Format:

Laboratory programs are conducted by the tutor.

4. Venue:

Depends on the program. Contacts the tutor before the course.

5. Grading:

A comprehensive evaluation by participation to lectures, experimental researches and presentation of the research results.

Cardiovascular Surgery

Lecture (Code: 7631, 1st-year: 6 units)
Practice (Code: 7632, 2nd-year: 4 units)
Lab (Code: 7633, 2nd-～3rd-year: 8 units)

1. Instructors:

Professor: Hirokuni Arai
Associate Professor: Tomohiro Mizuno
Contact person: Hirokuni Arai E-mail: hiro.cvsg@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Cardiovascular Surgery is a discipline of medical science which deals the surgical treatment of the disease of heart and aorta. Main objective of Cardiovascular Surgery in the graduate course is to provide students opportunity to study surgical anatomy, pathophysiology, pharmacology, and advanced treatment. Students are also taught basic research for the surgical treatment.

Practice

Goals/Outline:

Practices on the methods and points of case history, physical examination, imaging diagnosis, and laboratory tests. The treatments and cares of patients are learned in accordance with the disease, as well as the perioperative cares and surgical techniques of cardiovascular surgery.

Available programs:

Preoperative Conference:	Monday, Wednesday, Thursday and Friday	9:00-9:30am
Postoperative Conference:	Monday, Wednesday, Thursday and Friday	8:30-9:00am
Surgical Operation:	Monday, Wednesday, Thursday and Friday	
Research Conference:	Tuesday	7:30-9:00am
Journal Club:	Tuesday	9:00-9:30am

Lab

Goals/Outline:

To elucidate the mechanism of ischemic heart diseases, such as left ventricle dilatation and subsequent heart failure, mitral valve regurgitation (MR) and left ventricle aneurysm.

1) Developing technique of beating mitral valve surgery
2) Developing new technique/surgery for ischemic heart disease
3) Research for prognosis of postoperative patients with long term follow up

3. Format:

Small-group guidance

4. Venue:

Different venue depending on the specific program

5. Grading:

Comprehensive evaluation system

Nephrology

Lecture (Code:7641, 1styear:6units)
Practice (Code:7642, 2ndyear:4units)
Lab (Code:7643, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Sei Sasaki, Associate Professor: Shinichi Uchida
Contact person: Sei Sasaki E-mail ssasaki.kid@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

We are studying molecular mechanism of homeostatic actions in kidney, and mechanism of developing diseases when the homeostatic actions are broken down. In addition, we are studying advanced treatments for these diseases.

Available programs:

Lecture	as needed
Special Lecture	as needed
Journal Club	Thursdays 17:00 – 18:00
Research Conference	Every other Thursdays 18:30 – 19:30

Practice

Goals/Outline:

We are trying to comprehend diseases which are caused by failure of homeostatic mechanisms, and to understand mechanisms of the diseases from cell level to whole patient body. Furthermore, we are considering medical treatments, and curing these diseases.

Available programs:

Ward round	Thursdays 14:00 – 15:00
Case Conference	Thursdays 15:00 – 17:00
Pathology Conference	Tuesdays (twice a month) 17:00 – 18:30
Blood Purification Conference	Thursdays 11:00 – 13:00

Lab

Goals/Outline:

We are extensively studying ion channels and transporters concerning with hereditary diseases. Especially, we are analyzing function of gene and proteins causing 'common disease', for example hypertension and diabetes mellitus, and we are developing clues of treatment for those diseases.

Available program:

We can accept as needed.
Group Conference Mondays 14:00 – 16:00
We can provide opportunity for studying abroad.

3. Grading:

We give a grade from comprehensive standpoint based on attendance and research results.

Comprehensive Reproductive Medicine

Lecture (Code:7651, 1styear:6units)
Practice (Code:7652, 2ndyear:4units)
Lab (Code:7653, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Toshiro Kubota
Associate professor: Satoshi Obayashi
Junior associate professor: Naoyuki Yoshiki
Contact person: Toshiro Kubota E-mail t.kubota.gyne@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Our goal is to understand systemically from the physiological to the pathological condition through clarifying characteristics of the reproductive cells and organs, and to foster the universal education of reproductive endocrinology, perinatal medicine, gynecological oncology, climacteric/menopausal medicine and gynecological infection disease. These 5 fields are the main targets of this department.

Available programs:

Lecture	As needed
Special Lecture	As needed
Seminar	As needed
Journal Club	Monday 8:00– 8:30
Operation Conference	Monday 16:00 – 18:00
Research Conference	Friday 17:00 – 19:00

Practice

Goals/Outline:

To acquire the clinical skill of medical diagnosis and therapeutic maneuver based on understanding the lecture.

I Reproductive endocrinology: Mastering of the ovulation induction, oocyte pick-up and ICSI by attending IVF program
II Perinatal medicine: Acquisition of assessment technique on maternal and fetal condition by joining obstetrical team
III Gynecological oncology: Mastering medical diagnosis and therapeutic maneuver through bed-side learning
IV Climacteric/menopausal medicine: Mastering therapeutic maneuver to improve female QOL by attending menopausal clinic
V Gynecological infection disease: Attending the clinic and acquirement of therapeutic maneuver

Available programs:

Gynecological pathology conference	3rd Monday	18:00– 20:00
IVF conference	As needed	
Professor's round & pre-operation conference	Every Monday	14:00– 17:00
Post-operation conference	Everyday (except Monday)	16:00– 17:00

Lab

Goals/Outline:

As a clinical department, laboratory experiments need to restore the results to practical medicine like diagnostic methods, therapeutic maneuver and preventive medicine.

I Reproductive endocrinology:
1 Development of the method to increase intracellular Ca^{2+} influx to obtain restored fertility
2 Improvement of implantation by clarifying physiology of granulosa cell, germ cell, villi, endometrium.
II Perinatal medicine:
1 Elucidation of the CP mechanism by MRI and pathology with using the animal model of cerebral blood flow occlusion.
2 Clarifying the mechanism of the uterine contraction through nitric oxide - arginine pathway
III Gynecological oncology:
1 Investigation of the effect of the growth factors on cultured carcinoma cells
2 Constructive mechanism of blood vessel with using

IV Climacteric/menopausal medicine:
1 Revelation of osteoporosis with cultured osteoblast and osteoclast
2 Clarification of female hormone on the endothelial function and the formation of atherosclerosis
3 Explanation of aging on central nervous system

V Gynecological infection disease: Attending the clinic and acquirement of therapeutic maneuver
1 To reveal the infection mechanism of herpes and adenovirus

Research divisions :

1) Research in physiology, endocrinology and metabolism in the reproductive medicine
2) Research of female physical and mental changes with aging
3) Pathophysiological examination of gynecological oncology
4) Clinical research and basic research in perinatal medicine

Available program:

1, Cell culture technique of ovarian granulosa cells, endometrial cells, malignant cells, osteoblast and so on.
2, Determination of intracellular calcium (by Fura 2 method)
3, Measurement of intra-cellular IP_3
4, Hormonal assay in plasma, urine, follicular fluid (RIA & EIA)
5, Immunohistochemistry with ABC method
6, Analysis of micro-structure with electrical microscopy
7, Determination with molecular biological technique.
8, Physiological determination of endothelial function
9, Determination of cerebral blood flow with MRI in cerebral infarction
10, Analysis of protein expression with flow-cytometry

3. Format:

A lot of lectures by active leaders in the front line of various fields are held during the doctor course, which is free to join. But this practice is essential to be inspired to get the knack. Every stuff and mentor in the department can lead to get the technique of the experiments and the research presentation and to complete thesis.

4. Venue:

OB/GYN conference room on the 8th floor in the medical hospital building B (B-8)

5. Grading:

Monthly reports in the research conference will be estimated for grading, which include the results of the latest experiments, ongoing research problems and the future view of the individual experiments.

6. Notes:

We will strongly recommend to joining the OB/GYN related medical society. A part of necessary expense should be supported by the department.

Urology

Lecture (Code:7661, 1styear:6units)
Practice (Code:7662, 2ndyear:4units)
Lab (Code:7663, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Kazunori KIHARA, Associate Professor: Yasuhisa FUJII
Contact person: Yasuhisa FUJII E-mail y-fujii.uro@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline

Urology is the surgical specialty that focuses on the urinary tracts, and on the male reproductive system. The organs covered by urology include the kidneys, adrenal glands, ureters, urinary bladder, urethra, and the male reproductive organs (testes, epididymis, vas deferens, seminal vesicles, prostate and penis). Urology is closely related to, and in some cases overlaps with, diverse medical fields including oncology, nephrology, gynecology, andrology, pediatric surgery, gastroenterology, and endocrinology. Minimally-invasive surgery for urological disorders has been one of the most important topics in this field.

Available programs:

Lecture , Special Lecture, and Seminar: As needed
Case Conference: Every Monday 7:00-8:00 Every Thursday 7:00-9:00
Clinical Conference: Every Thursday 15:00-17:00
Clinical and Basic Research Conference, and Journal Club: Every Saturday 7:00-10:30

Practice

Goals/Outline:

Medical professionals specializing in the field of urology are called urologists and are trained to diagnose, treat, and manage patients with urological disorders. Particularly, our graduate students will learn minimum-incision endoscopic urologic surgery (MIES). MIES is gas-less single-port access minimally-invasive surgery and has been developed in our department. The students will also learn urologic pathology, be promoted the ability of logical thinking, and will also have a lot of chances to improve their English presentation skills by preparing papers for international journals and meetings. Case conference is held in English.

Available programs:

Urologic Pathology Conference: Every Thursday 15:00-17:00
Ward round: Every Thursday 13:00-15:00
Attendance of Surgery: As needed
Preoperative Case Conference: Every Monday 7:00-8:00, Every Thursday 7:00-9:00
Clinical and Basic Research Conference, and Journal Club: Every Saturday 7:00-10:30

Lab

Goals/Outline:

Following studies have been extensively carried out in our laboratory with various biological and molecular biological techniques:

1) Development of differentiation-inducing therapy against hormone-resistant prostate carcinomas
2) Investigation on molecular mechanisms, in particular deregulation of the NO system, underlying voiding and erectile dysfunction to develop rational therapy
3) Overcoming therapeutic resistance to chemo- and/or radiotherapy against urological malignancies using novel molecular targeted agents
4) Investigation on functional roles of p63 protein in urothelial carcinomas

Available program:

Participation in a research group: As needed

3. Format:

Small group lectures are provided. Round of talks for reports and discussions on research are held as many as possible.

4. Venue:

Venues are different according to the program.

5. Grading:

Grading are performed in a comprehensive way based on the lecture, practice, and laboratory participation situation, reports about research, and conference presentations.

Esophageal and General Surgery

Lecture (Code:7671, 1styear:6units)
Practice (Code:7672, 2ndyear:4units)
Lab (Code:7663, 2nd-~3rdyear: 8 units)

1. Instructors:

Professor	Tatsuyuki KAWANO
Associate Professor	Yoichi KUMAGAI, Yasuaki NAKAJIMA
Junior Associate Professor	Yoshinori INOUE
Assistant Professor	Kagami NAGAI Masatoshi JIBIKI Kenro KAWADA Yutaka TOKAIRIN Toshifumi KUDO Takahiro TOYOFUKU Yutaka MIYAWAKI

Contact person: Tatsuyuki KAWANO TEL 5803-5252 E-mail kawano.srg1@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Our goals are to develop the new methods of diagnosis and treatment of the disease of esophagus, and to contribute to the medical progression. Also, we aim to bring up young doctors of esophageal and general surgery.

Available programs:

Lecture	occasionally
Special Lecture	occasionally
Seminar	occasionally
Conference	on every Monday and Thursday, at 7:30 am.

Practice

Goals/Outline:

Our goals are to learn and study the methodology of the diagnosis and treatment of the esophageal and general surgery clinically.

Available programs:

Professor's round	every Friday

Lab

Goals/Outline:

Our goals are to analyze the disease of esophagus physiologically, molecular biologically, and pathologically, and to examine the general surgical technique, post-operative management, preventive medicine, and epidemiology.

3. Format:

With the instructors, clinical questions are discussed, presented, and finally contributed as the original paper.

4. Venue:

Mainly at our medical office

5. Grading:

Grading is performed according to the attending to our lecture, conference and clinical practice. The contents of the research are also graded.

6. Notes:

We have no limit for participants.

Thoracic Surgery

Lecture (Code:7681, 1styear:6units)
Practice (Code:7682, 2ndyear:4units)
Lab (Code:7683, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Kenichi Okubo, M.D. E-mail okubo.thsr@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Thoracic Surgery is a discipline of medical science which deals the surgical treatment for the disease of lung, mediastinum and diaphragm. Main objective of Thoracic Surgery in the graduate course is to provide students opportunity to study surgical anatomy, pathophysiology, pharmacology, and advanced treatment. Students are also taught basic research for the surgical treatment. The goal of the course is to educate next-age thoracic surgeon with surgical mind and well-trained surgical skills.

Available programs:

Lecture:	As Necessary
Special Lecture:	As Necessary
Seminar:	As Necessary
Journal Club:	Monthly, 4th Tuesday
Conference:	As Necessary

Practice

Goals/Outline:

Practices on the methods and points of case history, physical examination, imaging diagnosis, and laboratory tests. The treatments and cares of patients are learned in accordance with the disease and cancer stage, as well as the perioperative cares and surgical techniques of thoracic surgery.

Available programs:

Preoperative Conference: Monday 16:00-17:30
Postoperative Conference: Monday 17:30-18:00
Chest Conference: Monday 18:00-19:00
Clinical Round: Tuesday 8:00-9:00
Clinic-Pathological Conference: Wednesday 17:00-19:00

Lab

Goals/Outline:

1) Developing of novel therapeutics for lung cancer by elucidating invasion/metastasis mechanism of cancers
2) Identification of genes as predicting factors in surgically resected specimens
3) Development of multimodality treatment for locally advanced lung cancer

Available program:

Participation in research groups: As necessary

3. Format:

Small-group guidance

4. Venue:

Different venue depending on the specific program

5. Grading:

Comprehensive evaluation system

Igakuken Disease-oriented Molecular Biology

Lecture (Code:9021, 1styear:6units)
Practice (Code:9022, 2ndyear:4units)
Lab (Code:9023, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Visiting Professor Takahiko Hara (E-mail: hara-tk@igakuken.or.jp)
Visiting Professor Masanari Itokawa (E-mail: itokawa-ms@igakuken.or.jp)
Visiting Professor Masato Hasegawa (E-mail: hasegawa-ms@igakuken.or.jp)
Visiting Professor Haruo Okado (E-mail: okado-hr@igakuken.or.jp)

2. Course Description and Timetable

Lecture

Goals/outline: By listening to professional lectures, participants are able to understand molecular machanisms of life-threatening diseases such as cancer, diabetes, schizophrenia, amyotrophic lateral sclerosis, and brain malformations. Such knowledge will eventually lead us to develop novel therapeutic strategies against them. In addition, it is important to establish good animal models (including genetically engineered mice), which faithfully reproduce symptom and progression of the diseases.

Available programs:

Lecture: To be announced

Special Lecture: Igakuken annual symposium, Igakuken lecture series (8 per year), etc. To be announced.

Seminar: Igakuken international symposia (4 per year), Igakuken seminar series (>30 per year), etc. To be announced.

Journal club: [Takahiko Hara] Friday 16：**00–18**：00, [Masanari Itokawa] Wednesday 10：**00–12**：00,
[Masato Hasegawa] Friday 14：**00–16**：00, [Haruo Okado] Tuesday 12：**00–14**：00

Practice

Goals/Outline: Participant summarizes the results of research activity as a progress report. Through mutual discussion with professors and other lab members, he/she knows a better future direction. Once obtaining sufficient experimental data to draw a definitive conclusion, participant can present his/her paper in a public or internal conference. We instruct how to make a good poster and understandable presentation files. Meanwhile, participants can learn the newest knowledge and trend in a particular research field of their interest by reporting highlights of the conference/symposium to professors and lab members.

Available programs:

Research progress report: [Takahiko Hara] Thursday 16：**00–18**：00, [Masanari Itokawa] Monday 10：**00–12**：00,
[Masato Hasegawa] Monday 16：**00–18**：00, [Haruo Okado] Thursday 12：**00–14**：00

Rehearsals and reports for conferences: As needed.

Igakuken internal conference for young investigators (October)

Lab

Goals/Outline:

[Takahiko Hara] We attempt to elucidate how tissue stem cells (hematopoietic stem cells, skeletal muscle stem cells, etc.) are developed in embryos and maintained in adults by utilizing *in vitro* differentiation systems of ES/iPS cells and conditional KO mouse strains. In addition, we advance the molecular biology of CXCL14, which is involved in obesity-induced diabetes, carcinogenesis, feeding behavior, etc.

[Masanari Itokawa] Our research focuses on unraveling the pathophysiology of mental illnesses using molecular biology tools. Our ultimate goal is to identify new disease mechanisms, leading to the development of novel and more efficacious therapies. We perform genetic association studies, as well as metabolomics studies using samples from patients with mental disorders. Any abnormalities identified from patient samples are investigated further, using *in vitro* and *in vivo* systems, such as, cell culture assays to highlight functional alterations and behavioral studies in gene knock-out mouse models.

[Masato Hasegawa] We investigate the molecular pathogenesis and progression of neurodegenerative diseases including Alzheimer's disease, Parkinson's disease and amyotrophic lateral sclerosis. We use biochemistry, immunohistochemistry and molecular biology in all our work of in vitro, cellular and animal models to find effective ways for clinical therapy.

[Haruo Okado] To discover the fundamental cause of various nervous diseases, e.g., brain tumors, brain malformations, and neurodevelopmental disorders, we will study the molecular mechanisms for the regulation of neural development in the cerebral cortex using gene-targeted mice, primary cultures,

viral vectors, in-utero electroporation, real-time imaging of slice culture, immunohistochemistry, and transcription analysis.

Available program: To be announced.

3. Format:

All the classes will be interactive with small numbers of participants.

4. Venue:

Please make a contact with the corresponding professor before starting each class.

5. Grading:

Participants will be evaluated based on the attendance rate (70%) and the overall quality of research performance (30%).

Clinical Anatomy

Lecture (Code:7691, 1styear:6units)
Practice (Code:7692, 2ndyear:4units)
Lab (Code:7693, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Keiichi Akita. e-mail; akita.fana@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Lectures are aimed to understand clinical anatomy for proper diagnosis and treatment. Comparative anatomy and developmental biology are also applied for better understanding about the spatial arrangement of the organs or vessels.

Available programs:

Lecture	Friday 10:00 to 12:00, October and November
Special Lecture	A/N
Seminar	A/N
Journal Club	Thursday 16:30 to 17:30
Conference	Every three month, 17:00 to 18:00

Practice

Goals/Outline:

Practice is aimed to find out the way to understand the facts. This process is designed through the dissected cadavers, or reading papers. Staining or special dissection technique is available depends on the research purpose.

Available programs:

Seminar	Monday 9:00 to 10:00

Lab

Goals/Outline:

Lab is aimed to find out the way to reveal the facts. Histological analysis or embryological research is helpful for understanding of the clinical anatomy. These techniques are applied for special part of the body with student's special interest. Especially we are active in the research fields of cloacal development and synovial joint development using genetically modified mouse embryos.

Available programs

Participation in a research group: A/N

3. Format:

Small group instruction will be mainly performed to facilitate free discussion between participants and instructors.

4. Venue:

Various rooms will be used depending on the program. Please check by yourself or ask instructors before attending the course.

5. Grading:

Performance will be generally evaluated considering the content of research reports, presentation status at the meeting or seminar, publication and so on.

6. Notes:

The number of students is not limited.

Systems BioMedicine

Lecture (Code:7701, 1styear:6units)
Practice (Code:7702, 2ndyear:4units)
Lab (Code:7703, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Professor Hiroshi Asahara E-mail asahara.syst@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Analyze genome network for tissue development and pathogenesis of inflammation by combining multiple systems approaches.

Available programs:

Lecture	irregular
Special Lecture	irregular
Seminar	irregular
Journal Club	irregular
Conference	irregular

Practice

Goals/Outline:

Mircoarray, Cell-based high throughput screening, etc, will be utilized as critical method for systems biomedicine.

Available programs:

Mircoarray, Cell-based high throughput screening, mice gene targeting experiments irregular

Lab

Goals/Outline:

Using our techniques, core molecular network for tissue development and inflammatory diseases will be examined.

Available program:

The function of on-coding RNA in development and diseases will be examined.
Development and regeneration using ES and iPS will be analyzed.
Genome dynamics during embryogenesis will be monitored by new technique.
Novel systems approaches will be established and applied for developmental biology and medicine.

3. Format:

Concept and techniques of systems biomedicine will be introduced in the seminar series.

4. Venue:

Not determined yet.

5. Grading:

Individual's acquisition will be carefully evaluated by presentation, report and publication.

6. Notes:

The attendee may have to utilize adenovirus and mice samples.

Comprehensive Pathology

Lecture (Code:7711, 1styear:6units)
Practice (Code:7712, 2ndyear:4units)
Lab (Code:7713, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor	Masanobu Kitagawa	
Contact person	Masanobu Kitagawa	E-mail: masa.pth2@tmd.ac.jp

2. Course Description and Timetable:

Lecture

Goals/outline:

Topics on the morphogenesis and functional expression in organogenesis and regulatory mechanisms of organ functions will be introduced and lectured. Then, the discussion will be performed on morphological findings and changes of organ functions in physiological aging process and various diseases from the standpoint of morphology, immunopathology genetics, virology, and molecular biology.

Available programs:

Lecture	irregular
Special Lecture	irregular
Seminar	Tuesday 19:00 ～
Journal Club	Tuesday 8:00 ～
Progress meeting	Friday 9:30 ～

Practice

Goals/outline:

To clarify pathogenesis of various diseases from many points of view, students will practice pathological, molecular biological and immunological procedures of analytical methods using surgical specimens, autopsy materials and samples from animal model systems.

Available programs:

Macroscopic pathological diagnosis course	Tuesday 9:30
Clinico-pathological conference	Tuesday 17:00
Pathological conference on neurosurgical specimens	1st Monday 18:00
Pathological conference on breast tumors	2nd Monday 18:00
Pathological conference on gynecological specimens	3rd Monday 18:00
Pathological conference on gastrointestinal specimens	irregular
Pathological conference on kidney biopsy	Tuesday 16:00
Pathological conference on bone/soft part tumors	irregular

Lab

Goals/outline:

To clarify pathogenesis of various diseases, pathological, molecular biological and immunological analysis will be performed using biopsy samples, surgical specimens and autopsy materials. Experimental approach will also be developed for determining organogenesis and functional development of various organs as well as aging phenomena and pathogenesis of specific diseases.

Available programs:

Participation in project groups below — at any time

Projects

1) Analysis of the pathogenesis of retrovirus-induced leukemia and development of the therapeutic model against leukemia
2) Molecular pathological analysis of myelodysplastic syndromes
3) Molecular pathological analysis of cancer progression
4) Molecular pathological analysis of hematological malignancies
5) Molecular pathological analysis of drug-resistance in tumor cells
6) Experimental approach for the mechanisms of leukemogenesis using animal models

3. **Format:**
   Small group instruction will be mainly performed to facilitate free discussion between participants and instructors.

4. **Venue:**
   Various rooms will be used depending on the program. Please check by yourself or ask instructors before attending the course.

5. **Grading:**
   Performance will be generally evaluated considering the content of research reports, presentation status at the meeting or seminar, publication and so on.

6. **Notes:**
   The number of students is not limited.

Molecular Oncology

Lecture (Code: 7721, 1st year: 6units)
Practice (Code: 7722, 2nd year: 4units)
Lab (Code: 7723, 2nd-~3rd year: 8 units)

1. Instructors:

Contact person: Yasuhito YUASA E-mail yuasa.monc@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

To understand the basic mechanisms underlying carcinogenesis

Available programs:

Lecture	ad hoc
Special Lecture	ad hoc
Seminar	ad hoc
Journal Club	Twice per month
Conference	Twice per month

Practice

Goals/Outline:

The students present their own research data and introduce important papers from newly-arrived journals, which will be thoroughly discussed.

Available programs:

Conference

Lab

Goals/Outline:

To learn the basic scientific techniques necessary for pursuing cancer research

Available program:

PCR, RNA analysis, Western blotting, cell culture, DNA transfection

3. Format:

Small group lesson

4. Venue:

M&D tower 18th floor

5. Grading:

To assess achievements in Lecture, Practice and Lab by reports and examination

6. Notes:

None

Surgical Pathology

Lecture (Code:7731, 1styear:6units)
Practice (Code:7732, 2ndyear:4units)
Lab (Code:7733, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person:Associated Professor Akashi Takumi E-mail akashi.path@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The goal is to understand the definition, patho-physiology, classification, anatomical findings including immunohistochemistry, and differential diagnosis of the neoplastic and non-neoplastic diseases.

Available programs:

Lecture occasionally
Special Lecture occasionally (twice a year)
Seminar occasionally
Journal Club Every tueday 8:30-9:00
Surgica pathology Conference Every tueday 14:00-14:30
Autopsy macroscopical Conference Every tueday 9:30-10:30
Autopsy microscopical Conference Every tueday 17:00-18:00
Respiratory surgery- Pathology conference Every Wednesday 17:00-17:30
Neurosurgery-Pathology conference Once a month (first Monday) 18:30-19:30
Breast surgery-Pathology conference Once a month (second Monday) 18:30-19:30
Dermatology- Pathology conference Once a month (fourth Monday) 18:30-19:30

Practice

Goals/Outline:

The goal is to understand the practice of surgical pathology (how to diagnose a disease and prepare reports) and propose problems concerning to diagnosis and patho-physilogy of the diseases.

Available programs:

Surgical pathology is conducted in morning as a rule and you can participate anytime.

Lab

Goals/Outline:

The goal is to acquire the various methods including morphological and molecular biological technologies to carry out research.

Available program:

1) Preparation of light microscopic specimens
2) Method of immunohistochemistry
3) Preparation and observation of electron microscopic specimens
4) DNA and RNA preparation from fresh and paraffin-embedded tissues and realtime-PCR analysis
5) FISH analysis of paraffin-embedded specimens
6) Flowcytometry analysis of malignant lymphoma

3. Format:

Both practical and laboratory exercises are conducted by small members of students when a clinical specimen is available. Students should notify us what method(s) they wish to learn beforehand we will contact them when the time comes.

4. Venue:

Lectures, practice, and lab are conducted at B-5floor Pathology center.

Experimental Animal Model for Human Disease

Lecture (Code:7741, 1styear:6units)
Practice (Code:7742, 2ndyear:4units)
Lab (Code:7743, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Professor : Masami Kanai E-mail mkanai.arc@cmn.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Our goal is to understand the research activity includes disease -model animal's analysis of morphology, especially focus on disease's model for animal development in a comprehensive and systematic fashion.

Available programs:

Lecture	To be announced
Special Lecture	To be announced
Seminar	To be announced

Practice

Goals/Outline:

The purpose of our Practice is to learn how to plan experiments, how to analyze and interpret the results. Students will develop skills in reading and presenting research papers of high impact and quality in the field as well as in presenting the student's own research.

Available programs:

Progress report	Thursday 12:30-13:30
Journal Club	Thursday 17:00-18:00
Conference	Twice a year (August, February)

Lab

Goals/Outline:

The goal of our lab is to provide an opportunity to learn the developmental biology through the analyses of the relationship between Animal Models for Human Diseases mice such as the neonatal hepatitis and causal components. We collect the basic data for the future applied research development of prenatal diagnosis of embryonic early.

1) Molecular biological analysis of organ formation using knockout mice and knockout ES cells.
2) Application of Sox17 mutant mice as the animal model for endocrine disease.

Available program:

To be announced

3. Format:

Lecture, group discussion and experiments

4. Venue:

Please contact the instructor in charge before the course.

5. Grading:

Attendance rate and presentation
Class Participation/Contribution 70%
Presentation : 30%

6. Notes:

Nothing special

Signal Gene Regulation

Lecture (Code:7751, 1styear:6units)
Practice (Code:7752, 2ndyear:4units)
Lab (Code:7753, 2nd-～3rdyear: 8 units)

1. Instructors:

Contact person: Masataka Nakamura E-mail naka.gene@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Lecture and seminar on regulation of cellular signals involving cell proliferation, differentiation and motility. The primary goal of this course is to understand implication of signal transduction in proliferation and transformation of human T cells.

Available programs:

Lecture The third Friday 9:00 – 10:30

Special Lecture Any time

Seminar Any time

Journal Club Thursday 12:30 – 13:30

Conference Any time

Practice

Goals/Outline:

To understand signal gene function, practices in ectopic expression of disease-related genes will be done with recombinant DNA technology.

Available programs:

Four days in August and February

Lab

Goals/Outline:

To learn and handle recombinant DNA molecules, pacipitants will carry out experiments of identification of genes and their mutation.

Available program:

Twice in a year

3. Format:

Lecture, Seminar, Practice and Experiment

4. Venue:

Research Center for Medical and Dental Sciences, Building 8 South (4F – 6F)

5. Grading:

Comprehensive evaluation

6. Notes:

Lecture and practice are given in English with exception.

Biofunctional Molecular Science

Lecture (Code:7761, 1styear:6units)
Practice (Code:7762, 2ndyear:4units)
Lab (Code:7763, 2nd-~3rdyear: 8 units)

1. Instructors:

Associate Professor: Tomoya Hirano
Contact Person: Tomoya Hirano E-mail hira.chem@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Functional molecules, which can "modulate" or "sense" the physiological functions, such as enzyme inhibitors and fluorescent sensors are especially useful for elucidating intracellular or extracellular signal transduction pathway. In this class, students are expected to study and learn the strategy for the development of such molecules. In addition, this class also focuses on the development of novel drug and diagnostic tools for various diseases.

Available programs:

Lecture: To be announced

Special Lecture: To be announced

Seminar: To be announced

Journal Club: To be announced

Conference: To be announced

Practice

Goals/Outline:

Drug Design Chemistry covers several aspects of organic chemistry, analytical chemistry, medicinal chemistry and chemical biology. Through this course, students are expected to understand the experimental techniques related to those scientific fields.

Available programs:

Seminar: To be announced

Lab

Goals/Outline:

Students participate in our research group, and do some experimental research related to this class.

Available program:

Participation in Research Group

3. Format:

Participation, discussion and debate with lecturer and other students

4. Venue:

Lecture and Special Lecture: Seminar room at Institute of Biomaterials and Bioengineering
Others: Laboratories and rooms of our research group at Institute of Biomaterials and Bioengineering

5. Grading:

Grating is based mainly on attendance on Lecture, Practice and Lab. Progress of research project performed by student is also considered.

6. Notes:

Almost all lectures are performed in English.

Medicinal Chemistry

Lecture (Code:7771, 1styear:6units)
Practice (Code:7772, 2ndyear:4units)
Lab (Code:7773, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor Hirokazu Tamamura
Contact person: Medicinal Chemistry Hirokazu Tamamura E-mail tamamura.mr@tmd.ac.jp

2. Course Description and Timetable

Lecture

The aim of this lecture is to provide the ability to analyze structures, properties and biological functional molecules.
This lecture covers chemistry of functional molecules, structural chemistry, analytical chemistry and molecular recognition.

Available programs:

Lecture	As occasion demands
Special Lecture	As occasion demands
Journal club	As occasion demands

Practice

Goals/Outline:
Students learn the basis of how to read scientific journals related to functional molecules.

Available programs:

Journal club	As occasion demands

Lab

Goals/Outline:
Students learn basic techniques including chemical synthesis, equipment analysis and separation.

Available program:

1)Practice of organic synthesis As occasion demands
Chemical synthesis of peptide compounds

2)Practice of method of equipment analysis As occasion demands
Organic analysis by methods of MRI, MASS, UV, IR

3)Practice of structural molecular biology
Capture of structure data, analysis of three-dimentional structures

4)Practice of separation of organic compounds
Thin-layer chromatography, Column chromatography, High performance liquid chromatography

3. Format:

Lecture： Our staffs teach a few students by the text.
Lecture, Seminar & Lab: Students learn and discuss with our staffs.
Special Lecture： Open seminar by foreign lecturers
Lab: Our staffs individually teach students.

4. Venue:

Lectures in the big seminar room of Institute of Biomaterials and Bioengineering, others in Department of Medicinal Chemistry.

5. Notes:

Everything except for special lectures is performed by small members. Attendance is definitely needed.

Biointerface Engineering

Lecture (Code:7811, 1styear:6units)
Practice (Code:7812, 2ndyear:4units)
Lab (Code:7813, 2nd-~3rdyear: 8 units)

1. Instructors:

Contact person: Akira Matsumoto E-mail: matsumoto.bsr@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline: Serum components play crucial roles in metabolic cycles and their concentration homeostasis is a manifestation of dynamic equilibrium of life. On occasion of abnormal metabolic pathway, it is revealed as a change in concentration of each specific serum component. This lecture provides an overview of advanced materials and engineering aimed at detection of body fluids including serum components and mechanisms for their concentration homeostasis.

Available programs:

Lecture	As occasion calls
Special Lecture	As occasion calls
Seminar	As occasion calls
Journal Club	Every Monday 13:00-15:00
Conference	As occasion calls

Practice

Goals/Outline:

Learn about detection principles for various serum components, theory, characteristics and extent of application. Search of the state-of-the-art publications and discuss on challenges, needs and approaches.

Available programs:

Seminar	Every other week Mondays 13:00-15:00
Publication Search	As occasion calls

Lab

Goals/Outline: Learn handling and measurement of biological components including nucleotides, proteins and cells. Obtain skills for analysis and measurement of cell functions. Make ones familiar with other related techniques, lab activities including planning of experiments, analysis and discussion.

Available program:

Molecular biology, Cell Engineering	As occasion calls
Optical and Electrical Measurements	As occasion calls
Fabrication of device	As occasion calls

3. Format:

After trained for basic handling of biological samples and instruments, join a research group of a mentor.

4. Venue:

Dept. of Regulation, Room #6 (4th floor) and Seminar Room (3rd floor), Institute of Biomaterials and Bioengineering

5. Grading:

Participation in lectures, lab practice, presentation and report.

Material Biofunctions

Lecture (Code:7821, 1styear:6units)
Practice (Code:7822, 2ndyear:4units)
Lab (Code:7823, 2nd-～3rdyear: 8 units)

1. Instructors:

Associate Professor: Akiko Nagai, Assistant Professor: Kosuke Nozaki

Contact person: Akiko Nagai TEL 5280-8017 E-mail: nag-bcr@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The objective and principle of the department of Material Biofunctions is to educate students with materials knowledge demanded to medical and dental doctors who are leading medical professionals and bioscientists who are capable of carrying out their own research at an international level in the area of their special fields of science, respectively. Main objective in this graduate course is to provide students opportunity to study the reaction mechanism between materials and living tissues. Students are also taught on investigation of development of new surface modification processes of biomaterials to acquire tissue-affinity.

Available programs; (joint with Inorganic biomaterials)

Lecture	Monday
Special Lecture	A/N
Seminar	A/N
Journal Club	Friday
Conference	Thursday

Practice

Goals/Outline:

We have developed educational programs which enable students to acquire interdisciplinary and extensive material knowledge, while cultivating a research-oriented mindset. Students are taught to understand research trends and opinions on biomaterials.

Available programs:

Lab seminar: Thursday (16:00-17:30)
Journal Club: Friday (10:00-12:00)

Lab

Goals/Outline:

We have developed our existing curriculum significantly so that students can, through tutorials, acquire not only extensive material knowledge but also advanced research skills.

Available program:

Experiment (Synthesis of ceramic powder, making of ceramics and biological assessments): A/N

3. Format:

Small group

4. Venue:

Department of Material Biofunctions, Institute of Biomaterials and Bioengineering
http://www.tmd.ac.jp/i-mde/www/index.html

5. Grading:

Assessment on the final examination or report

6. Notes:

We desire participation of highly-motivated students.

Genetic Regulation

Lecture (Code:7831, 1styear:6units)
Practice (Code:7832, 2ndyear:4units)
Lab (Code:7833, 2nd-～3rdyear: 8 units)

1. Instructor:

Contact person: Prof. Akinori KIMURA E-mail akitis@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Both genetic factor and environmental factor are known to interact in the pathogenesis of human diseases. The genetic factor itself is mainly determined by diversity in human genome. In this course, the concept of human genome diversity and its involvement in the pathogenesis of human diseases, especially the intractable diseases, will be lectured for better understanding of human genome research and its use in the development of novel diagnostic, therapeutic and/or preventive methods for the intractable diseases.

Available programs:

Lecture to be announced

Special Lecture to be announced

Seminar Monday 15:00-17:00

Journal Club Thursday 17:00-18:00

Practice

Goals/Outline:

To learn about the method to analyze the human genome diversity and to practice the experimental planning for the identification and proving the involvement of disease-related human genome information. In addition, analysis and discussion about the experimental data will be provided.

Available programs:

Data meeting	Monday 13:00-14:00
Practical discussion	Monday 14:00-15:00

Lab

Goals/Outline:

Identification of the disease-associated human genome diversity for cardiovascular diseases, autoimmune diseases, cancers, and infectious diseases will be performed. In addition, functional alterations caused by the disease-associated human genome diversity will be investigated in vitro by using genetic, molecular biological, biochemical, and cell biological methods as well as in vivo by establishing genetic engineered mice. These research projects will be done for developing novel diagnostic, therapeutic and preventive methods for the diseases.

Available program:

Experimental course: Participation is available upon request. Details will be announced upon participation

3. Format:

Studies will be done based on the problem oriented learning.

4. Venue:

To be announced upon contacting to the instructor.

5. Grading:

Grading is based on evaluation by oral examination, data presentation, discussion and research performance including presentation in scientific meetings.

6. Notes:

Small group studies with less than 5 students.

Bioinformatics

Lecture (Code:7841, 1styear:6units)
Practice (Code:7842, 2ndyear:4units)
Lab (Code:7843, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Hiroshi Tanaka, research assistant professor: Fengrong Ren, assistant professor: Kaoru Mogushi
Research assistant professor: Takeshi Hase, Kumiko Iijima
Contact person: Hiroshi Tanaka E-mail tanaka@bioinfo.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

We will study on comparative genomics, molecular evolution, networks, and omics pathology from the viewpoint of systems biology.

Available programs:

Lecture	Will be announced
Special Lecture	Will be announced
Seminar	Every Tuesday, 17:15-19:15
Journal Club	Every Tuesday, 17:15-19:15
Conference	N/A

Practice

Goals/Outline:

We will practice computer programming, bioinformatics tools, databases, statistics that are necessary for the analyses of computational biology.

Available programs:

Omics Informatics	Every Monday, 15:00-16:30
Systems Biology	Every Tuesday, 15:00-15:30
Virus Evolution	Every Wednesday, 16:00-17:30
Experimental Omics	Every Thursday, 16:00-17:30

Lab

Goals/Outline:

We will conduct experiments for omics pathology.

Available program:

Will be announced

3. Format:

Seminar and discussion

4. Venue:

Will be announced

5. Grading:

Grading will be made by considering attendance and presentation in seminars, practice, and lab.

6. Notes:

N/A

Applied Gene Medicine

Lecture (Code:7851, 1styear:6units)
Practice (Code:7852, 2ndyear:4units)
Lab (Code:7853, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Yoshio Miki,
Contact person: Yoshio Miki E-mail miki.mgen@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Cancer is a genetic disease and the study of not only a sporadic tumor but also a hereditary tumor has contributed to the understanding of carcinogenic mechanism greatly. Carcinogenesis is a multistep process in which cells accumulate multiple genetic alterations as they progress to a more malignant phenotype. We lecture on molecular mechanism of the carcinogenesis and diversity of the cancer based on these points of view.

Available programs:

Lecture	at any time
Special Lecture	at any time
Journal Club	every Tuesday 10 : 00-12 : 00

Practice

Goals/Outline:

Aiming to acquire fundamental knowledge and basic skills, such as molecular biology, histochemistry, microbiology, and molecular medicine in order to accomplish the above-mentioned purpose,

Available programs:

Participation in a research group	at any time

Lab

Goals/Outline:

Searching for the genes which mutate in process of carcinogenesis. DNA and RNA are extracted from human clinical samples, and the changes on the primary structure of genes and transcripts are screened. Based on the information, carcinogenic mechanism is examined.

Available program:

Participation in a research group	at any time

3. Format:

Lecture in a group of a few people. To urge the student's lively participation, a lot of opportunities for questions and debatings are set as much as possible.

4. Venue:

Confirm it to the instructor before attending a lecture because it differs by the program.

5. Grading:

We evaluates overall based on the participation situation and the research content to the lecture, the practice, and the experiment.

6. Notes:

Welcome the students interested in cancer research and the carcinogenic mechanism. Please contact the instructor.

Department of Molecular Cytogenetics

Lecture (Code: 1281, 1st-year: 4 units, 2nd-year: 3 units)
Practice (Code: 1282, 1st-year: 2units, 2nd-year: 2 units)
Lab (Code: 1283, 2nd-～4thyear: 8 units)

1. Instructors:

Professor	Johji Inazawa M.D., Ph.D.
Associate Professor	Ken-ichi Kozaki D.D.S., Ph.D.
Assistant Professor	Jun Inoue Ph.D.
Assistant Professor	Shin Hayashi M.D., Ph.D.

Contact person: Johji Inazawa TEL 03-5803-5820 E-mail johinaz.cgen@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The principal aim of Department of Molecular Cytogenetics is to understand the molecular mechanism underlying cancer and genetic diseases including chromosome aberration syndromes. Our research interests are as follows; (1) Identification of genes responsible for cancer and unknown genetic diseases, (2) Development of innovative techniques for detection of genomic and epigenomic aberrations underlying the pathogenesis of cancer and genomic disorders, and (3) Establishment of practically useful tools for diagnosis in Personalized Medicine of cancer and intractable diseases. It is our goal to bridge the gap between basic and clinical research for the benefit of each of the patients.

Available programs:

Lecture Anytime

Special Lecture Anytime

Seminar Anytime

Journal Club Weekly Monday 9:00 – 11:00

Conference Anytime

Practice

Goals/Outline:

The main purposes of our practice are understanding and acquisition about various technologies of genomic/epigenomic analysis, functional analysis, cell biological analysis and biochemical analysis in the scientific research for cancer and genomic disorders.

Available programs:

Progress Meeting Weekly Saturday 9:00 – 12:00

Lab

Goals/Outline:

1) Identification of cancer-related genes, including microRNAs, by genomic and epigenomic approaches, and characterization of these genes using *in vitro*/ *in vivo* experimental models reproducing characteristic aspects and behaviors for human cancers; *e.g.* uncontrolled excess of cell growth, metastasis, epithelial-mesenchymal transition (EMT), and altered autophagy.

2) Molecular cytogenetic investigation of genomic disorders including mental retardation and multiple congenital anomalies (MCA/MR) using integrative genomics and epigenomics.

3) Development of innovative techniques for genomics and/or epigenomics in medical sciences.

Available program:

Anytime

3. Format:

Individual guidance in principle.

4. Venue:

A lecture room is different in a program, so check it for staff beforehand.

5. Grading:

Evaluated based on presentation of results of own research and journal articles in seminar.

6. Notes:

No limited about the number of applicants.

Biochemical Genetics

Lecture (Code:7871, 1styear:6units)
Practice (Code:7872, 2ndyear:4units)
Lab (Code:7873, 2nd-~3rdyear: 8 units)

1. Instructors:

Professor: Shigetaka Kitajima Assistant Professor: Junya Kawauchi
Associate Professor: Yujiro Tanaka
Contact person: Shigetaka Kitajima e-mail: kita.bgen@mri.tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

To learn the basic principle of molecular biology and biochemistry, function and pathogenetic implication of disease genes in human diseases, thus establishing independent activity of reading and understanding the molecular mechanism leading to disease. Both basic biological and clinical aspects are also emphasized.

Available programs:

Lecture	On appropriate time
Special Lecture	On appropriate time
Seminar	On appropriate time
Journal Club	17:00~20:00 every Monday

Practice

Goals/Outline:

To learn and understand various experimental techniques in molecular biology, focusing cellular, DNA and Protein work in lab bench. Deciphering gene function using disease model animal is encouraged.

Available programs:

Journal Club and Work Progress 17:00~20:00 every Monday

Lab

Goals/Outline:

To promote understanding and get used to various experimental techniques in molecular biology, especially focusing on cellular, DNA and Protein work in lab bench. Deciphering gene function using disease model animal is also encouraged.

Available program:

Some experiments and participation in a research group are available after interview

3. Format:

Available for a few students. Many questions and vigorous discussion are encouraged.

4. Venue:

Lab of Biochemical Genetics at 19 th Floor, M&D Tower

5. Grading:

Participation to lecture, practice, and experiment are essential.

6. Notes:

English is used throughout the lecture.

Structural Biology

Lecture (Code:7881, 1styear:6units)
Practice (Code:7882, 2ndyear:4units)
Lab (Code:7883, 2nd-～3rdyear: 8 units)

1. Instructors:

Associate Professor: Teikichi Ikura
Contact person: Structural Biology Teikichi Ikura E-mail ikura.str@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

The goal of this lecture is to provide the ability to understand and analyze the relationship between structure and function of biopolymers such as proteins and nucleic acids. This lecture deals with the fundamental contents on protein folding and stability, and then takes an overview on various folding-diseases such as Alzheimer's disease from the physicochemical viewpoint.

Available programs:

Lecture	As occasion demands
Special Lecture	As occasion demands
Journal Club	As occasion demands

Practice

Goals/Outline:

In this practice, students learn how to read scientific journal related to folding-diseases, and understand various experimental techniques to elucidate the inherent functions of the proteins and the mechanism of the diseases.

Available programs:

Journal Club	As occasion demands

Lab

Goals/Outline:

Students learn fundamental techniques for physicochemical study on proteins such as gene cloning, protein expression and purification, structural analysis and interaction analysis.

Available program:

Some experiments and participation in a research group are available after interview.

3. Format:

Every course is available for a few students. Many questions and vigorous discussion are encouraged.

4. Venue:

Lab of Structural Biology at 22th Floor, M&D Tower

5. Grading:

Attendances at lecture, practice, and experiment are obligatory.

6. Notes:

English is used throughout the lecture.

Hematology

Lecture (Code:7891, 1styear:6units)
Practice (Code:7892, 2ndyear:4units)
Lab (Code:7893, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Osamu Miura, MD., PhD. Lecturer: Ayako Arai, MD., PhD.
Contact person: Ayako Arai, MD., PhD. E-mail ara.hema@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Normal functions and abnormalities of proto-oncogenes and intracellular signaling molecules that play important roles in leukemogenesis will be explained. Diagnosis and therapy of hematological malignancies based on this knowledge will be also explained

Available programs:

Lecture As occasion demands

Special Lecture As occasion demands

Seminar As occasion demands

Journal Club 17:00-18:00 on Monday

Conference 17:00-18:00 on Tuesday

Practice

Goals/Outline:

Clinical and morphological features of hematological malignancies and diagnostic skills will be learned. Laboratory tests for hematological disorders and therapeutic strategies for these disorders will be also learned and practiced.

Available programs:

Clinical Conference 18:00-19:00 on Monday
Research Conference 16:00-17:00 on Thursday
Clinical Round 13:00-15:00 on Thursday
Hemato-pathological Conference As occasion demands

Lab

Goals/Outline:

Abnormalities of proto-oncogenes and intracellular signaling molecules that play important roles in leukemogenesis will be analyzed by cellular and molecular biology methods to develop new diagnostic and therapeutic methods for hematological malignancies.

Available program:

Participation in research groups as occasion demands.

3. Format:

A small-group teaching system and discussions with the participants.

4. Venue:

As different rooms will be used for each program, contact the lecturer beforehand.

5. Grading:

Comprehensively evaluated based on participation in each program and progress in research.

6. Notes:

Practice and Lab courses will accept not more than 10 students.

Molecular Endocrinology and Metabolism

Lecture (Code:7901, 1styear:6units)
Practice (Code:7902, 2ndyear:4units)
Lab (Code:7903, 2nd-~3rdyear: 8 units)

1. Instructors:

Professor: Yoshihiro Ogawa
Contact person: Takanobu Yoshimoto E-mail tyoshimoto.mem@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Our training program enables PhD students to prepare for their future academic and/or clinical careers in the multidiscipline of endocrinology and metabolism.

Available programs:

Lecture N/A

Special Lecture N/A

Journal Club N/A

Seminar N/A

Practice

Goals/Outline:

Our clinical training program provides for the practice through comprehensive inpatient and outpatient services in the area of endocrine and metabolic disorders.

Available programs:

Clinical conference	Monday 10:00-12:00
Ward round	Monday 15:00-17:00

Lab

Goals/Outline:

The research program provides mentor-based training in experimental design, laboratory and clinical research techniques and methodology, and interpretation and analysis of the results obtained from cellular and molecular biology, physiology, clinical physiology, clinical therapeutics, and health sciences.

Available program:

Participation in a research group as needed.
Research conference N/A

3. Format:

Small-group seminar based on discussion with mentor.

4. Venue:

N/A

5. Grading:

Comprehensive evaluation based on the participation and achievement in the lecture, practice, and lab.

Hepato-Biliary-Pancreatic Surgery

Lecture (Code:7911, 1styear:6units)
Practice (Code:7912, 2ndyear:4units)
Lab (Code:7913, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Minoru Tanabe Associate Professor: Shinji Tanaka
Contact person: Shinji Tanaka E-mail bg-secre.msrg@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Lectures on biomolecular mechanisms of carcinogenesis, cancer growth, invasion and metastasis in digestive organs, especially liver, biliary duct and pancreas; leading to molecular target therapy. In addition, the general and advanced researches on the diagnosis and treatment of the cancers are expounded, as well as clinical and basic researches on liver transplantation.

Available programs:

Lecture	A/N
Special Lecture	A/N
Seminar	A/N
Journal Club	A/N
Conference	A/N

Practice

Goals/Outline:

Practices on the methods and points of case history, physical examination, imaging diagnosis, and laboratory tests. The treatments and cares of patients are learned in accordance with the disease and cancer stages, as well as the perioperative cares and surgical techniques of liver transplantation.

Available programs:

Preoperative Conference:	Every Thursday	AM7:30-9:00
Postoperative Conference:	Every Monday	AM7:30-9:00
Surgical Operation:	Every Tuesday, Thursday and Friday	
Ward Round:	Every Tuesday	AM8:00-9:00
HBP Conference:	Every Thursday	AM7:30-9:00
Journal Club:	Every Wednesday	AM7:30-9:00

Lab

Goals/Outline:

Since poorer prognosis and awful QOL are recognized generally in the patients with cancers of the digestive system, especially liver, biliary duct and pancreas, the development and clinical application of novel cancer treatments are required in this field. Furthermore, the surgical treatments in this area should require the highly skilled techniques, and the intensive cares of severe complications such as postoperative liver failure. There also remain so many problems to be solved in the liver transplantation; for example, immuno-suppression, infectious diseases and organ preservation. The mission of our researches is a breakthrough in these critical matters.

Available program:

Participation in research groups: A/N

3. Format:

Small-group guidance

4. Venue:

Different venue depending on the specific program

5. Grading:

Comprehensive evaluation system

Orthopaedic and Spinal Surgery

Lecture (Code:7921, 1styear:6units)
Practice (Code:7922, 2ndyear:4units)
Lab (Code:7923, 2nd-～3rdyear: 8 units)

1. Instructors:

Professor: Atsushi Okawa
Assistant Professor: Yoshiaki Wakabayashi, Shigenori Kawabata
Associate Professor: Shinichi Sotome, Junior Associate Professor: Mitsuhiro Enomoto, Yoshinori Aso
Contact person: (Orthopaedic Surgery) Yoshiaki Wakabayashi: TEL: PHS 61239, E-mail: wakorth@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Motor and/or sensation disorder results from spinal cord disorders and/or peripheral nerve disorders.
We explain the mechanism of degeneration or pathogenesis of the locomotorium lesion which were caused with joint disease, spine, intervertebral disc, spinal cords, peripheral alteration, aging, injury, and tumorigenesis mechanism.
Besides, based on these knowledge, we comment on a therapy and preventive medicine.

Available programs:

Lecture	:	As occasion demands
Special Lecture	:	As occasion demands
Seminar	:	As occasion demands
GCOE Seminar	:	As occasion demands
Journal Club	:	Tuesday, Friday 7:30 - 8:30
Research Progress	:	Tuesday 7:30 - 8:30

Practice

Goals/Outline:

We practice findings of clinical problem of the locomotorium lesion such as joints, spine, intervertebral disc, spinal cord, peripheral nerve disorders, aging, injury, tumorigenesis mechanism, and image findings.
Through these practices we train to make the clinical diagnosis and to plan the adequate treatment.

Available programs:

Bedside Professor Round	Monday 14:30-16:30
Clinical Conference	Monday 7:30-9:00
Continuous Medical Education	Thursday 7:30-8:00

Lab

Goals/Outline:

Molecular biologically and using physiological procedure we analyze motor of joints, spine, intervertebral disc, spinal cord, peripheral nerve disorders, aging, injury, tumorigenesis mechanism and definite how to treat these disorders. And also we would do tissue reconstruction or develop an artificial bone.

Available program:

Participation in a research group; Everyday as occasion demands

3. Format:

We sentence you to small number of people education of independent participation type of a graduate student.

4. Venue:

Orthopaedic Surgery Office Room, Lab room (M&D tower 11F)

5. Grading:

Synthetic judgment would be done: attendance to meetings, numbers of paper, presentation, and so on.

6. Notes:

We welcome participation from the other lecture about a graduate school lecture, a particular lecture, a graduate school seminar.
We have several cooperation study with other section or GCOE.

Investigative Radiology and Endoscopy

Lecture (Code:7931, 1styear:6units)
Practice (Code:7932, 2ndyear:4units)
Lab (Code:7933, 2nd-~3rdyear: 8 units)

1. Instructors:

Contact person: Isamu Ohashi, MD E-mail oohsmrad@tmd.ac.jp

2. Course Description and Timetable

Lecture

Goals/outline:

Diagnosis and treatment of various kinds of disease in the fields of abdomen, chest, central nerve system, gynecology and urology, and plastic surgery using diagnostic modalities are expounded. Treatment techniques under endoscopy are also expounded. Estimation of various diseases based on the measurement of ADC (apparent diffusion coefficients), diagnostic approach to the early detection of HCC (hepatocellular carcinoma), and sentinel node navigation surgery mainly for digestive organ cancers and mammary cancer using ^{99m}Tc are introduced.

Available programs:

Lecture	on demand
Special Lecture	on demand
Seminar	on demand

Practice

Goals/Outline:

Endoscopy and diagnosis on radiology are actually practiced in cooperation with other lectures at clinical places.

Available programs:

Endoscopy	Monday~Friday on every week
Radiology	Monday~Friday on every week

Lab

Goals/Outline:

Available program:

3. Format:

Small number system is employed.
A chance of discussion is held aggressively.

4. Venue:

Check for charge instructors beforehand, because it`s different depending on programs.

5. Grading:

Estimated overall based on the participation situation to the lectures and the practices and the study contents.

6. Notes:

No number limitation.

Disease Genomics

Lecture (Code:7941, 1styear:6units)
Practice (Code:7942, 2ndyear:4units)
Lab (Code:7943, 2nd-~3rdyear: 8 units)

1. Instructors:

Professor	Shumpei Ishikawa M.D., Ph.D.
Assistant Professor	Takayuki Isagawa Ph.D. ・Hiroto Katoh M.D., Ph.D.

2. Course Description and Timetable

Lecture

Goals/outline:

The purpose of this course is to learn the general flow of disease genomics research, including its application, method, and data mining. One of the main themes is analyzing genomics for cancer tissues, which are composed of not only cancer cells but also stromal cells including fibroblasts, immune cells, etc. Students will learn the application of genomics approach to these complex multi-cellular systems to discover new therapeutic and diagnostic targets and to analyze more details about their mechanisms. In addition, this course includes studies for practical aspects of clinical genomics, like method, infrastructure and guidelines through actual analysis of clinical samples.

Available programs:

Lecture	any time
Special Lecture	any time

Practice

Goals/Outline:

To learn about advanced genomic technologies and methods of molecular biology, to read original scientific articles from related fields, and to perform data interpretations and discussions.

Available programs:

Journal Club	any time

Lab

Goals/Outline:

To be familiar with the basic techniques of molecular biology by learning how to handle DNA/RNA, proteins, culture cells, and lab animals. Also, to be familiar with the evaluations of the whole genomics profiling of complex multi-cellular systems, and understanding practical aspects of clinical genomics.

Available program:

Participation in a research group	any time

3. Format:

Lectures, discussions and experiments.

4. Venue:

To be announced upon contacting the instructor.

5. Grading:

Grading will mainly be based on the content of seminar and research presentations.

6. Notes:

Nothing in particular