

2024

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**Graduate School of Life Dentistry at Niigata
Doctoral Course**

Syllabus

The Nippon Dental University

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Foreword

This syllabus is to provide guidelines for students who will take required credits at the Graduate School of Life Dentistry at Niigata, The Nippon Dental University.

1. Graduate education consists of lectures such as the major subject, associate subjects, other subjects and research directions for making the dissertation.
2. The doctoral course normally takes four years to complete, but it must be completed by the eighth year. A third year student, who has completed the following requirements (such as completion of 30 credits and excellent achievements on research) can complete the program before the fourth year.
3. Each student must select courses and credits under the guidance of the director of the major subject program. Students must earn 30 credits in total within the registered period.
4. After obtaining recognition of the director of the major subject program, students must inform the Director of Dentistry Research, Graduate School of Life Dentistry at Niigata of their selected lecture subjects.
5. Upon the discretion of the director of the major subject program, other graduate level lectures at a different university can be taken and any credits achieved may be approved for addition up to a maximum of 10 credits.
6. Under the guidance of the director of the major subject program, students can also obtain necessary directions for research work at the following places: The Graduate School of Life Dentistry at Tokyo, The graduate school of a different university and research institutes.
7. As completion requirements for the doctoral course, successful candidates should fulfill the guidelines and must pass an examination of the dissertation and final examination.
8. The dissertation cannot be submitted to the committee, if the student has not earned 30 credits in total in the appointed major subject.
9. In accordance with the final examination, the dissertation and its related field of major subjects will be tested by oral or written examination.
10. In accordance with the regulations of the Graduate School, The Nippon Dental University, a graduate degree (PhD) will be awarded by the Nippon Dental University School of Life Dentistry at the Niigata graduation ceremony to the successful candidates who have fulfilled the guidelines.

Major Subject Programs / Director

Courses	Fields	Major Subject Programs	Directors
Basic Science	Oral & Maxillofacial Morphology	Comparative Morphology of Oral Hard Tissue and Mucous Membranes	KAGEYAMA Ikuo
		Histology	TSUJIMURA Maiko
	Oral & Maxillofacial Functions Science	Physiology of Mastication and Salivation	SATOH Yoshihide
		Molecular Biology of Saliva and Salivary Glands	MORITA Takao
	Oral & Maxillofacial Infection and Environmental Health Science	Oral Infection and Immunity	MIKAMI Masato
		Oral Environment and Community Dental Health	KOMATSUZAKI Akira
Applied Science	Oral Biomaterials and Occlusion Science	Developmental Science of Oral Biomaterials	OHKUMA Kazuo
		Functional Occlusal Treatment	MIZUHASHI Fumi
		Functional Occlusal Treatment	UEDA Kazuhiko
	Oral & Maxillofacial Imaging and Histopathological Diagnostics	Quantitative Diagnostic Imaging	OGURA Ichiro
		Histopathology of Pathogenic Mechanisms	OKADA Yasuo
	Oral & Maxillofacial Bio-response and Anesthesiology	Pharmacodynamics of Hard Tissue and Salivary Glands	NINOMIYA Kazunori
		Anesthesiology and Resuscitation	OOHASHI Makoto
Clinical Science	Advanced Conservative Dentistry and Periodontology	Endodontics	MOROZUMI Toshiya
		Advanced Operative Dentistry	SHINKAI Koichi
		Periodontology	SATO Soh
	Oral & Maxillofacial Growth and Development	Pediatric Oral Behavior Science	KUROKI Junko
		Orthodontics and Dentofacial Orthopedics	
	Oral & Maxillofacial Surgery and Systemic Medicine	Oral and Maxillofacial Surgery	TANAKA Akira
		Clinical Examination	OHKOSHI Shogo

Major Subject Programs and Main Themes of the Study

Major Subject Programs (Director)	Main Themes of the Study
Comparative Morphology of Oral Hard Tissue and Mucous Membranes (KAGEYAMA Ikuo)	<ol style="list-style-type: none"> 1. Morphogenesis of the head and neck 2. Clinical anatomy of the maxillofacial region 3. Tissue regeneration study using stem cells
Histology (TSUJIMURA Maiko)	<ol style="list-style-type: none"> 1. Immunohistochemical study of the taste bud 2. Histological study of the tissue around oral implants 3. Histological study on alteration of the tissue after oral surgical procedures
Physiology of Mastication and Salivation (SATOYoshihide)	<ol style="list-style-type: none"> 1. Central control mechanisms of feeding and swallowing 2. Central transmission mechanisms of oral sensation 3. Relationship between occlusion and motor function in sports dentistry
Molecular Biology of Saliva and Salivary Glands (MORITA Takao)	<ol style="list-style-type: none"> 1. Molecular mechanism of salivary secretion 2. Molecular mechanism of intracellular signaling by receptor stimulation 3. Photoimmunotherapy and fluorescence imaging of oral and maxillofacial cancer
Oral Infection and Immunity (MIKAMI Masato)	<ol style="list-style-type: none"> 1. Analysis of host response against periodontal pathogens 2. Study on signal transduction of oral bacteria 3. Study on activation of innate immunity by oral bacterial products
Oral Environmental Community Dental Health (KOMATSUZAKI Akira)	<ol style="list-style-type: none"> 1. The evaluation of a community-based oral health care program for prevention effectiveness 2. A field study of oral health public services associated with health promotion 3. Development of a new masticatory function assessment system employing a laser beam for oral health
Developmental Science of Oral Biomaterials (OHKUMA Kazuo)	<ol style="list-style-type: none"> 1. Study on fabrication of dental restorations using CAD/CAM 2. Fatigue of dental polymer adhesive material 3. Development of the automation of the teeth preparation
Functional Occlusal Treatment (MIZUHASHI Fumi)	<ol style="list-style-type: none"> 1. Digital denture 2. Study on oral function of denture wearer 3. Analysis of salivary protein on oral dryness patient
Functional Occlusal Treatment (UEDA Kazuhiko)	<ol style="list-style-type: none"> 1. Methods of implant therapy and physical properties of implant materials 2. The suitability of fixed dental prosthesis 3. Physical properties of CAD/CAM materials
Quantitative Diagnostic Imaging (OGURA Ichiro)	<ol style="list-style-type: none"> 1. SPECT/CT for oral and maxillofacial diseases 2. Characteristic multimodal imaging of MRONJ 3. Diffusion-weighted MR imaging and US elastography of oral cancer

Major Subject Programs and Main Themes of the Study

Major Subject Programs (Director)	Main Themes of the Study
Histopathology of Pathogenic Mechanisms (OKADA Yasuo)	<ol style="list-style-type: none"> 1. Comprehensive study on genesis, proliferation, invasion, metastasis, diagnosis and treatment of oral cancer 2. Study on tumorous property acquisition of the lining epithelium of odontogenic cyst 3. Study on histopathological malignancy grade, angiogenesis and metastasis of malignant tumor of salivary gland
Pharmacodynamics of Hard Tissue and Salivary Glands (NINOMIYA Kazunori)	<ol style="list-style-type: none"> 1. Study on secretory mechanisms in the salivary gland 2. Study on substances suppressing cariogenicity 3. Mechanisms of adrenal catecholamine secretion
Anesthesiology and Resuscitation (OOHASHI Makoto)	<ol style="list-style-type: none"> 1. Study on the awaking process of sedation 2. Study on the Effect of Biological Invasions in Dentistry on Blood Sugar 3. Development of new local anesthesia methods
Endodontics (MOROZUMI Toshiya)	<ol style="list-style-type: none"> 1. Cellular characterization of dental pulp stem cells and their application to periodontal tissue regeneration 2. Microbiome analysis in pulpal and apical periodontal disease 3. Characterization of endodontic materials and equipment and development of a novel root canal cleaning system
Advanced Operative Dentistry (SHINKAI Koichi)	<ol style="list-style-type: none"> 1. Study on tooth adhesion of dental restorative materials 2. Study on prevention and control for dental root caries 3. Research on development of dental adhesive materials with calcification promoting function
Periodontology (SATO Soh)	<ol style="list-style-type: none"> 1. Study on the periodontal tissue regeneration 2. Study of the periodontal-systemic connection 3. Study on esthetics in periodontal treatment
Pediatric Oral Behavior Science (KUROKI Junko)	<ol style="list-style-type: none"> 1. Study of oral diseases and the underlying pathomechanisms 2. Study of the factor of tooth development and eruption 3. Study of development in salivary gland and salivary protein
Orthodontics and Dentofacial Orthopedics ()	<ol style="list-style-type: none"> 1. Biomechanical analysis of orthodontic treatment 2. Early treatment for malocclusion 3. Characteristics of orthodontic adhesive
Oral and Maxillofacial Surgery (TANAKA Akira)	<ol style="list-style-type: none"> 1. Experimental study on anti-cancer drug sensitivity test for oral cancer chemotherapy 2. Experimental study on regeneration of salivary gland, nerve and tooth 3. Clinical and experimental study on Medication-Related Osteonecrosis of the jaw
Clinical Examination (OHKOSHI Shogo)	<ol style="list-style-type: none"> 1. Research on the interrelation between oral diseases and systemic diseases from the viewpoint of the clinical laboratory 2. Sleep apnea syndrome and fatty liver 3. Differentiation of dental pulp stem cell

Oral & Maxillofacial Morphology

Major Subject	Comparative Morphology of Oral Hard Tissue and Mucous Membranes
Director • Position	KAGEYAMA Ikuo • Professor
Teaching Members • Position	TORIUMI Taku • Associate Professor
Location of Laboratory	2306 Professor's Office (4th Building • 3rd floor), Dissection room (Niigata Hospital • B1 floor)
Extension Phone Number • E-mail Address	2577 • kageyama@ngt.ndu.ac.jp
Teaching Methods	Lectures and laboratory practice
School Hours	Monday • 14:30~16:30
Classroom	1 st Laboratory (4th Building • 3rd Floor)
Practice Room	Dissection room (Niigata Hospital • B1 floor)
Objective for Lectures	<p>Students will learn the theory of cell culture as well as basic techniques needed to independently conduct various cell-related research, such as tissue regeneration studies using mesenchymal stem cells.</p> <p>Students will read through papers from Nature and Science and discuss scientific articles to obtaining graduate level scientific capabilities.</p>
Contents and Plans for Lectures	<ol style="list-style-type: none"> 1) Students will acquire basic skills in cell culture techniques. 2) Students will learn the methods for isolating cells from animal tissues. 3) Students will critically review papers from Nature and Science and discuss the methods, results, and discussion sections.
Evaluation Method for Grades	Students will be evaluated based on their understanding and attendance in lectures/hands-on training, research conducted, and deliverables.
Textbooks • Teaching Materials • References	<ol style="list-style-type: none"> 1) The Japanese Tissue Culture Association: The textbook for cell culture, 2nd ed, Jiho, Tokyo, 2020 2) Papers from Nature and Science
Instructions for Course • Qualifications	Those who wish to participate in this course should have appropriate intellectual ability and determination.
Comments	No comments in particular.

Oral & Maxillofacial Morphology

Major Subject	Histology
Director • Position	TSUJIMURA Maiko • Professor
Teaching Members • Position	YOKOSUKA Hiroyuki • Associate Professor
Location of Laboratory	4th Building • 3rd floor
Extension Phone Number • E-mail Address	2576 • h-maiko@ngt.ndu.ac.jp
Teaching Methods	Lecture and practice
School Hours	Wednesday • 9:00~12:00
Classroom	4th Building • 3rd floor
Practice Room	4th Building • 2nd floor, 3rd floor Advanced Research Center (6th Building) • 1st floor, 2nd floor
Objective for Lectures	The objective of this course is to learn histological techniques using light and electron microscopy and apply them to the research.
Contents and Plans for Lectures	Histological techniques Light microscopy: Conventional histological staining Immunohistochemistry Electron microscopy: Scanning electron microscopy Transmission electron microscopy
Evaluation Method for Grades	Grading will be decided based on comprehension of lecture and practice, attendance, and attitude.
Textbooks • Teaching Materials • References	1) Sano Y : Histological Techniques — Theoretical and Applied, Nanzando Co Ltd, Tokyo, 1985. 2) Mizuhira V : Manual of electron microscope in the field of medicine and biology, Kodansha Ltd, Tokyo, 1986.
Instructions for Course • Qualifications	No comments in particular.
Comments	No comments in particular.

Oral & Maxillofacial Functions Science

Major Subject	Physiology of Mastication and Salivation
Director • Position	SATOH Yoshihide • Professor
Teaching Members • Position	TAKAHASHI Mutsumi • Associate Professor
Location of Laboratory	5th Building • 3rd floor
Extension Phone Number • E-mail Address	2595 • ysatoh@ngt.ndu.ac.jp
Teaching Methods	Lectures, seminars and practice
School Hours	Tuesday • 13:30~15:30
Classroom	5th Building • 3rd floor
Practice Room	Laboratory of the Department of physiology (5th Building • 3rd floor)
Objective for Lectures	Postgraduate students have opportunities to study advanced knowledge and research techniques of feeding, swallowing, oral sensation and sports dentistry.
Contents and Plans for Lectures	Lectures and seminars provide advanced knowledge as well as neurophysiological research techniques for postgraduate students.
Evaluation Method for Grades	Comprehension of lectures and seminars, creativity of experimental design and a positive attitude.
Textbooks • Teaching Materials • References	Brain and Nerve,67(2), IGAKU-SHOIN Ltd.,2015
Instructions for Course • Qualifications	Passion and imagination for research are required.
Comments	No comments in particular.

Oral & Maxillofacial Functions Science

Major Subject	Molecular Biology of Saliva and Salivary Gland
Director • Position	MORITA Takao • Professor
Teaching Members • Position	TAKEZAWA Haruka • Associate Professor
Location of Laboratory	5th Building • 2nd and 3rd floors
Extension Phone Number • E-mail Address	2482 or 2592 • moritat@ngt.ndu.ac.jp
Teaching Methods	Lectures, reading books and papers, discussion and experimental practice
School Hours	Monday • 9:00~12:00 Modifiable
Classroom	5th Building • 3rd floor, Laboratory of the Department of Biochemistry
Practice Room	5th Building • 2nd and 3rd floors
Objective for Lectures	The aim of this class is to produce researchers who have knowledge of molecular biology and use it to their own researches. Students study the general properties and the roles of protein and nucleic acid. Further, they will acquire the gene technology such as PCR. They should read many papers and discuss them.
Contents and Plans for Lectures	Lectures, reading and discussion of the textbook. Reading many papers and writing a research paper. Practices: electrophoresis, blotting and gene transformation, PCR will be performed.
Evaluation Method for Grades	Students will be evaluated on their ability to understand the contents of textbook and documentations, to practice, to have research presentation and to write a research paper.
Textbooks Teaching Materials • References	1) Alberts B et al.: Nakamura K, Matsubara K (Supervised translation): Essential Cell Biology, Nankodo, Tokyo.
Instructions for Course • Qualifications	Students need to have pride and the desire of contributing to the progress of life science and medical technology through their research.
Comments	Students study using cultured cells and animals depending on the case, and can attend research conferences.

Oral & Maxillofacial Infection and Environmental Health Science

Major Subject	Oral Infection and Immunity
Director • Position	MIKAMI Masato • Professor
Teaching Members • Position	MARUYAMA Kosuke • Senior Assistant Professor
Location of Laboratory	4th Building • 2nd & 3rd floors, 8th Building • 3rd floor
Extension Phone Number • E-mail Address	2580 or 2485 • mikami@ngt.ndu.ac.jp
Teaching Methods	Lectures, reading articles and discussion, basic laboratory practice
School Hours	Wednesday • 13:30~16:00
Classroom	8th Building • 3rd floor
Practice Room	4th Building • 2nd & 3rd floors
Objective for Lectures	Students will have opportunities to study pathogenesis of microorganisms and host defense mechanisms such as inflammation and immunity. They will then decide the research theme for the academic dissertation.
Contents and Plans for Lectures	Students should obtain knowledge, skills and a positive attitude for research philosophy, research planning, data analysis, critical thinking, and presentation skills. In practice, students should obtain knowledge and skills of biosafety culture techniques, analytical instruments and sterilization techniques.
Evaluation Method for Grades	Grading is systematically undertaken using the following items: 1. The level of understanding of lectures and practice 2. Research work 3. Presentation at the meetings
Textbooks • Teaching Materials • References	1. Original articles Infection and Immunity, Cellular Microbiology, Immunology. Journal of Experimental Medicine, Journal of Dental Research, Journal of Periodontology 2. Textbooks for practice 1) Tokyo University: Manual for Microorganism Practices; 2nd ed, Maruzen, Tokyo, 1998. 2) Horio T et al.: Experimental Manual for Molecular Cell Biology, Nankodo, Tokyo, 1994. 3) Kuroki T et al.: Biomanual for Molecular Biology, Yodosha, Tokyo, 1995. 4) Sasaki H: Biotechnology, Yodosha, Tokyo, 1997.
Instructions for Course • Qualifications	Students should have the willingness and passion for research and education and furthermore, they are required to have the ability of critical thinking.
Comments	Students will work at the advanced research center and use special analytical instruments.

Oral & Maxillofacial Infection and Environmental Health Science

Major Subject	Oral Environment and Community Dental Health
Director • Position	KOMATSUZAKI Akira • Professor
Teaching Members • Position	KAMODA Takeshi • Associate Professor
Location of Laboratory	4th Building • 3rd floor, 8th Building • 3rd floor
Extension Phone Number • E-mail Address	2581 • rabbit@ngt.ndu.ac.jp
Teaching Methods	Lectures, Reading and Practical training
School Hours	Tuesday • 13:00~16:00
Classroom	4th Building • 3rd floor
Practice Room	Laboratory (4th Building • 3rd floor)
Objective for Lectures	To have students acquire advanced knowledge and analytical methods related to oral environmental health and to learn skills in garnering data which can serve as fundamentals for community dental health activities and in analyzing that data by the use of epidemiological methods. Students are expected to choose a study theme and write a thesis for the PhD degree. This program prepares students to become leaders in the field of community dental health.
Contents and Plans for Lectures	Through lectures, practice, experiments and research activities outside the campus, special knowledge will be gained related to community dental health planning, and collection and analysis of epidemiological data. In addition, this course offers special techniques related to dental health guidance and oral hygiene, thus helping students to become highly-qualified researchers and leading oral health providers. They could prove themselves to be such persons through their well-written dissertations.
Evaluation Method for Grades	Student's performance is evaluated comprehensively with special consideration given to the degree of understanding during lectures and practice, and to self- motivation and originality in research and social activity.
Textbooks • Teaching Materials • References	<ol style="list-style-type: none"> 1) Literature: Community Dentistry and Oral Epidemiology The Journal of the American Dental Association 2) Statistical Analysis: The Facts about the Nation's Health and Medical Care — A Government Survey Report. 3) Lecture: AOYAMA H (Supervision): Epidemiological Methods for Health Policy, 2nd ed, Igakushoin, Tokyo, 2005.
Instructions for Course • Qualifications	Students are required to pursue their studies with zeal and the spirit of inquiry and demonstrate initiative.
Comments	Materials for students will be provided as the need arises. There will be ample opportunity to participate in field surveys, to attend academic meeting and to publish research papers. Morale as well as material support is available.

Oral Biomaterials and Occlusion Science

Major Subject	Developmental Science of Oral Biomaterials
Director	OHKUMA Kazuo • Professor
Teaching Members • Position	IGARASHI Kensuke • Associate Professor
Location of Laboratory	5th Building • 3rd Floor, 5th Building • 2nd Floor
Extension Phone Number • E-mail Address	2589 • k-ohkuma@ngt.ndu.ac.jp
Teaching Methods	Lecture and laboratory practice
School Hours	Monday • 9:00~12:00
Classroom	Laboratory (5th Building • 3rd Floor)
Practice Room	Laboratory (5th Building • 2nd Floor)
Objective for Lectures	Graduate students taking this course master basic knowledge and methods to carry out research in the field of oral biomaterials.
Contents and Plans for Lectures	<p>1st Semester:</p> <ol style="list-style-type: none"> 1) Survey of articles in oral biomaterials 2) Discussion on the results of the articles surveyed 3) Report preparation based on the survey <p>2nd Semester:</p> <ol style="list-style-type: none"> 1) Experimental design for oral biomaterials 2) Property evaluation of oral biomaterials based on the experimental design (This includes laboratory practice) 3) Statistical analysis for data obtained from lab measurements 4) Investigation about lab measurements 5) Discussion on the results 6) Article preparation based on the above results
Evaluation Method for Grades	<p>Evaluation based on survey reports, articles and attendance</p> <p>Total score: 100 points</p>
Textbooks • Teaching Materials • References	<ol style="list-style-type: none"> 1) Japanese Society for Dental Materials and Devices: Dental Materials Journal, Japanese Publication Trading Co Ltd, 2014-2018. 2) Yanai H: 4Step Excel Statistics, 4th ed, OMS publication, Tokyo, 2015. 3) Nakajima H et al (editing): Standard Dental Engineering, 6th ed, Gakken Shoin, Tokyo, 2016. 4) Asai T: Need-to-Know Basics of Medical Statistics Vol. 1 — Let's overcome allergy to statistics! —, ATMS, Tokyo, 2010. 5) Asai T: Need-to-Know Basics of Medical Statistics Vol. 2 — Let's get to be able to interpret the results! —, ATMS, Tokyo, 2010. 6) Asai T: Need-to-Know Basics of Medical Statistics Vol. 3 — Let's get to be able to evaluate research quality! —, Atoms, Tokyo, 2010.
Instructions for Course • Qualifications	Credit will be given with a score of 60 or more score.
Comments	No comments in particular.

Oral Biomaterials and Occlusion Science

Major Subject	Functional Occlusal Treatment
Director • Position	MIZUHASHI Fumi • Professor
Teaching Members • Position	WATARAI Yuko • Senior Assistant Professor
Location of Laboratory	Medical Hospital 3rd floor (7th Building)
Extension Phone Number • E-mail Address	3300 • fumichan@ngt.ndu.ac.jp
Teaching Methods	Lectures, reading books and basic laboratory practice for research
School Hours	First semester: Thursday • 9:00~10:20 / Second semester : Tuesday • 14:40~16:00
Classroom	Laboratory of the Department of Removable Prosthodontics (7th Building 3rd floor)
Practice Room	Laboratory of the Department of Removable Prosthodontics (7th Building 3rd floor), Clinic of the Niigata Hospital
Objective for Lectures	Students have opportunities to learn special knowledges and treatment techniques related to stomatognathic functional diagnostics and removable denture prosthetics. Furthermore, students aim to learn advanced knowledge and establish the foundation for the study with highly original.
Contents and Plans for Lectures	Students can obtain deep knowledge in the field of prosthodontics through lectures, reading papers, and discussion. Students make use of this knowledge at planning a new study and writing a paper. Through laboratory practice, students carry out the study and master the procedure of writing a paper. In the clinic, students will master the prosthodontic treatment techniques and lay the foundation for gaining a specialist of prosthodontics.
Evaluation Method for Grades	Grading is systematically undertaken using the following items: The level of understanding contents of the lectures and practice, degree of initiative and originality in one's opinion, research work, presentation at the meetings, writing papers, prosthodontic treatment, accumulation of clinical cases, and percentages of school classes attended.
Textbooks • Teaching Materials • References	1) Dawson PE: Functional Occlusion From TMJ to Smile Design, Mosby, St. Louis, 2006. 2) Annals of Japan Prosthodontic Society 3) Journal of Prosthodontic Research 4) Journal of Prosthetic Dentistry
Instructions for Course • Qualifications	Ideally, students should have strong enthusiasm and inquiring minds regarding research and also should have a will to contribute to future prosthetics.
Comments	Equipment and facilities for research are available. Students will be given many opportunities for presentation and publication of papers, and will also be given support both practically and emotionally.

Oral Biomaterials and Occlusion Science

Major Subject	Functional Occlusal Treatment
Director • Position	UEDA Kazuhiko • Professor
Teaching Members • Position	SETO Munetsugu • Senior Assistant Professor
Location of Laboratory	Medical Hospital 4th floor (7th Building)
Extension Phone Number • E-mail Address	3310 • kazuhiko@ngt.ndu.ac.jp
Teaching Methods	Lecture, reading books and basic laboratory practice for research
School Hours	First semester : Friday 14:30~16:30 / Second semester : Thursday 10:00~12:00
Classroom	Medical Hospital 4th floor Oral Implant Care Unit
Practice Room	4rd floor clinic and research laboratory of Niigata Hospital, Oral Implant care Unit. Niigata Hospital.
Objective for Lectures	Students first learn the basics of dental treatment of stomatognathic functional diagnostics and advanced clinical skill of fixed prosthodontics, oral implantology at a high level professional education to become a dental specialist.
Contents and Plans for Lectures	Students take lectures, read Japanese and international journals and textbooks and discuss their contents, learn the basic knowledge and techniques of how to undertake research and research methodology. Then they will learn how to write an original paper. Students learn and obtain the knowledge and skill to undertake research through preliminary experiments. Afterwards, they learn use of the laboratory effectively and the clinical skills to obtain knowledge as a dental specialist.
Evaluation Method for Grades	Grading is systematically undertaken using the following items : understanding level of contents of the lectures and practice, writing an original advanced research paper, clinical treatment of patients, presentation at meetings and conferences and percentage of class attendance.
Textbooks • Teaching Materials • References	<ol style="list-style-type: none"> 1) Rosenstiel SE, Land MF, Fujimoto J; Contemporary Fixed Prosthodontics, 5th edition, Mosby St, Lois, 2006. 2) Branemark PI, Zarb GA, Albrektsson T; Tissue-Integrated Prostheses Quintessence, Chicago 1985. 3) Zarb GA, Bolender CL; Prosthodontic Treatment for Edentulous Patients. 12th edition Mosby. St Lois, 2003. 4) Lindhe J, Karring T, Lang NP; Clinical Periodontology and Implant Dentistry 3rd edition Copenhagen, Munksgaard 1997.
Instructions for Course • Qualifications	Students must have the will to study and must attend lectures and trainings.
Comments	Students can use the equipment and facilities from the Prosthodontic Department to obtain knowledge of a progressive basic science research and clinical research.

Oral & Maxillofacial Imaging and Histopathological Diagnostics

Major Subject	Quantitative Diagnostic Imaging
Director • Position	OGURA Ichiro • Professor
Teaching Members • Position	KAMETA Ayako • Senior Assistant Professor
Location of Laboratory	Hospital Building • 1st floor
Extension Phone Number • E-mail Address	3207 • ogura@ngt.ndu.ac.jp
Teaching Methods	Lecture: clinical courses, laboratory work
School Hours	Lecture: Thursday • 10:40~12:00 and others : arbitrary times
Classroom	Laboratory of Radiology (Niigata Hospital • 1st floor)
Practice Room	Laboratory of Radiology (Niigata Hospital • 1st floor)
Objective for Lectures	Learning subjects: concepts of ionizing radiations, their actions on matter through effects on simple chemical systems, biological molecules, cell, organisms, man and clinical radiology. Prerequisite: graduate standing Science/Engineering; one course in Biological Sciences or Physics/Chemistry.
Contents and Plans for Lectures	The Radiology Curriculum is evolving and expanding to meet the educational needs of students. This curriculum has been created under the supervision of the Director of the Radiology Program with input from the Department Committee, faculty and students. First students will begin a rotation (to receive training of oral and maxillofacial imaging, radiation therapy, and research activities), during the rotation students will be expected to acquire adequate knowledge and develop technical skills of oral and maxillofacial radiology. To evaluate their progress, and at the end of the rotation, student's level of understanding will be measured to identify any unfulfilled goals that need to be addressed by the resident and the faculty.
Evaluation Method for Grades	Written and oral comprehensive examinations in the area of study, and write, present and defend a dissertation which embodies the results of original investigation by the candidate.
Textbooks • Teaching Materials • References	1) Okano T, Kobayashi K, Arijji E (editing) : Oral and Maxillofacial Radiology, 6th ed, Ishiyaku Publishers, Tokyo, 2018.
Instructions for Course • Qualifications	All deadlines should be met.
Comments	No comments in particular.

Oral & Maxillofacial Imaging and Histopathological Diagnostics

Major Subject	Histopathology of Pathogenic Mechanisms
Director • Position	OKADA Yasuo • Professor
Teaching Members • Position	KANRI Yoriaki • Associate Professor
Location of Laboratory	Niigata Hospital • 3rd floor
Extension Phone Number • E-mail Address	2226 • yokada@ngt.ndu.ac.jp
Teaching Methods	Lectures, reading textbooks and articles by turns and discussion, basic laboratory practice for research
School Hours	Tuesday • 13:00~16:00
Classroom	Conference room(8th Building • 2nd floor), Seminar room(4th Building • 2nd floor)
Practice Room	3rd floor laboratory of the Niigata Hospital, 2nd floor laboratory of the Niigata School (4th Building), 2nd floor laboratory of the Biological Science Section in the Research Institute
Objective for Lectures	The objective is to improve the diagnosis and treatment of diseases through better understanding of the pathogenic mechanisms including etiology and the developmental processes of diseases, supplemented by the results of histopathological research. Specifically, students first acquire the abilities to review the necessary literature and techniques of experimental pathological research while also improving their ability of clinical pathological diagnosis, and then apply these skills to design an original research theme, and implement and complete the research.
Contents and Plans for Lectures	Students attend lectures, receive guidance to search and review many articles, and learn how to plan the theme of study. Through practice and training of research techniques, graduate students learn general staining (H-E), special stainings (immunohistochemical staining), molecular biology, microfocus X-ray CT images, cell and tissue cultures for studying the diagnosis and treatment of oral cancers, PCR, etc.
Evaluation Method for Grades	Grading is systematically conducted based on the following: level of understanding of the contents of lectures and practical sessions, originality of research and state of implementation, written and oral examinations.
Textbooks • Teaching Materials • References	<ol style="list-style-type: none"> 1) Takagi M (editorial supervising): Atlas of Oral Pathology, 3rd ed, Bunkodo, Tokyo, 2018. 2) Fukayama M et al (editing): Surgical Pathology, 5th ed, Bunkodo, Tokyo, 2006. 3) Fukayama M et al (editing): Atlas of Histopathology, 6th ed, Bunkodo, Tokyo, 2015. 4) Kitagawa M et al (editing): Standard Textbook of Pathology, 6th ed, Igakushoin, Tokyo, 2015. 5) Shirasuna K et al (editing): Oral Maxillofacial Surgery, 3rd ed, Ishiyaku Publishers, Tokyo, 2010. 6) Tsukinoki K, Okada Y (editing): Standard Oral Pathology, 1st ed, Gakkenshoin, Tokyo, 2017.
Instructions for Course • Qualifications	Possessing a sincere attitude toward research ; self-motivated, persevering and having a keen interest to conduct research ; clear motivation to contribute to the development of dental medicine
Comments	Our department is well equipped not only for morphological study, but also for immunohistochemical staining, with research facilities for cell culture and molecular biology necessary for <i>in vitro</i> and <i>in vivo</i> studies. There are opportunities to participate in domestic and international scientific meetings to present research findings and collect information.

Oral & Maxillofacial Bio-response and Anesthesiology

Major Subject	Pharmacodynamics of Hard Tissue and Salivary Glands
Director • Position	NINOMIYA Kazunori • Professor
Teaching Members • Position	FUKUI Kayoko • Senior Assistant Professor
Location of Laboratory	5th Building • 3rd floor
Extension Phone Number • E-mail Address	2481 • kazunori@ngt.ndu.ac.jp
Teaching Methods	Lecture, reading books and papers, discussion and experimental practice
School Hours	Thursday • 9:00~12:00
Classroom	Seminar room (4th Building • 2nd floor)
Practice Room	Laboratory of Pharmacology (5th Building • 3rd floor)
Objective for Lectures	Pharmacology investigates the action of drugs and explores how the drugs act on human beings. In other words, it is the study that investigates the response of the living body to the drugs. Therefore, it is important to understand the pharmacological action of the drugs from the viewpoint of interaction of the drugs and the living body. The aim of this class is to study basic and applied pharmacology on the basis of the physiological function of the living body.
Contents and Plans for Lectures	<p>Lecture, reading and discussion of the following items</p> <ol style="list-style-type: none"> 1) Principles of pharmacology 2) Molecular basis of pharmacology 3) Drugs and receptors 4) Pharmacokinetics 5) Drug interactions and adverse effects 6) Drug history and drug development <p>Experimental practice of the following items</p> <ol style="list-style-type: none"> 1) Isolation and culture of adrenal medullary cells 2) Measurement of adrenal catecholamines
Evaluation Method for Grades	The ability and the effort to read the textbook, to understand the documentation and to discuss the theme will be evaluated.
Textbooks • Teaching Materials • References	<ol style="list-style-type: none"> 1) Dawson JS, Taylor MNF, Reide PJW: Pharmacology. 2nd ed, Mosby. London, 2002. 2) Clark WG, Brater DC, Johnson AR: Goth's Medical Pharmacology, 13th ed. Mosby, St Louis, 1992. 3) Ogura H: Current Dental Pharmacology. 4th ed, Ishiyaku Publishers, Tokyo, 2005. 4) Ishida H: Dental Pharmacology, 4th ed, Ishiyaku Publishers, Tokyo, 2005.
Instructions for Course • Qualifications	Students need to have pride and the desire of contributing to the progress of life sciences through research.
Comments	A copy of the textbook and reference books used will be provided.

Oral & Maxillofacial Bio-response and Anesthesiology

Major Subject	Anesthesiology and Resuscitation
Director • Position	OOHASHI Makoto • Professor
Teaching Members • Position	IGUCHI Asami • Associate Professor
Location of Laboratory	Niigata Hospital • 2nd floor
Extension Phone Number • E-mail Address	3280 • oohashi@ngt.ndu.ac.jp
Teaching Methods	Lectures, reading books and papers by turns and discussion, basic laboratory practice for research
School Hours	Tuesday • 14:45~16:15 / Friday • 14:45~16:15
Classroom	Niigata Hospital • 2nd floor
Practice Room	Niigata Hospital • 2nd floor
Objective for Lectures	Students have opportunities to study advanced knowledge, treatment techniques and general management related to Dental Anesthesiology. Furthermore, to become dental specialist students should acquire research techniques and clinical techniques.
Contents and Plans for Lectures	Students should extensively read original papers and textbooks and attend lectures. At preliminary practice, graduate students will master monitoring of vital signs, reading a biomonitor and learn how to perform emergency resuscitation.
Evaluation Method for Grades	Grading is systematically undertaken using the following items: The level of understanding the contents of the lectures and practice, degree of initiative and originality in one's opinion, research work, presentation at the meetings, patient treatment in the clinic, accumulation of clinical cases and percentage of school classes attended.
Textbooks • Teaching Materials • References	1) FURUYA H et al: Handbook of Dental Anesthesia and General Health Management, Gakkensyoin, Tokyo, 2019. 2) FUKUSHIMA K et al: Dental Anesthesiology, Ishiyaku, Tokyo, 2019 3) MILLER RD et al: Miller's Anesthesia 6 th , Elsevier, 2013.
Instructions for Course • Qualifications	Ideally, students should have strong enthusiasm and inquiring minds regarding research and also should be able to contribute to future dentistry.
Comments	No comments in particular.

Advanced Conservative Dentistry and Periodontology

Major Subject	Endodontics
Director ・ Position	MOROZUMI Toshiya ・ Professor
Teaching Members ・ Position	KITAJIMA Kayoko ・ Associate Professor
Location of Laboratory	Niigata Hospital. 4th floor
Extension Phone Number ・ E-mail Address	3770 ・ morozumi@ngt.ndu.ac.jp
Teaching Methods	Lectures, journal club, research and clinical practice
School Hours	Tuesday ・ 13:00~16:00
Classroom	Laboratory on the 4 th floor of Niigata Hospital
Practice Room	Laboratory and clinic on the 4 th floor of Niigata Hospital
Objective for Lectures	Through lectures and practical training, students will acquire specialized knowledge and understanding of the development, pathology, tissue regeneration, prevention, and treatment of diseases in the dentin-pulp complex and apical periodontal tissues. Students will also develop logical thinking skills through reading and discussion of representative books and articles. In addition, students will master basic experimental techniques and acquire applied skills to realize their research themes.
Contents and Plans for Lectures	Students will deepen their knowledge of their field of expertise through lectures and journal club, acquire the latest knowledge, and formulate original research themes. Students will work with collaborators who have expertise in the field to construct a project and carry it out while acquiring the experimental techniques necessary for the research. After presenting the obtained research results at academic conferences, prepare papers and submit them to specialized academic journals. On the clinical side, the students will acquire specialized knowledge and treatment techniques to obtain certification from the JSCD, and at the same time, lay the foundation for acquiring a specialist in conservative dentistry through case studies.
Evaluation Method for Grades	Grades will be evaluated comprehensively based on the level of comprehension of lecture and practical training content, the advanced and originality of opinions in discussions, the state of implementation of research, presentations at academic conferences, and the content of medical treatment.
Textbooks ・ Teaching Materials ・ References	<ol style="list-style-type: none"> 1) Journal of Endodontics 2) Berman LH, Hargreaves KM : Cohen's Pathways of the PULP 12th ed, Elsevier, Amsterdam, 2020. 3) Rotstein I, Ingle JI : Ingle's Endodontics 7, People's Medical Publishing House, Beijing, 2019. 4) Toravinejad M, Fouad AF, Shabahang S : Endodontics Principles and Practice 6th ed, Elsevier, Amsterdam, 2020.
Instructions for Course ・ Qualifications	Candidates should have an interest in life science and a desire to advance the field of dentistry.
Comments	No comments in particular.

Advanced Conservative Dentistry and Periodontology

Major Subject	Advanced Operative Dentistry
Director • Position	SHINKAI Koichi • Professor
Teaching Members • Position	SUZUKI Masaya • Associate Professor
Location of Laboratory	Medical Hospital (7th Building) • 4th floor
Extension Phone Number • E-mail Address	3332 • shinkaik@ngt.ndu.ac.jp
Teaching Methods	Lectures, reading papers and discussion, laboratory practices for research, and clinical practices
School Hours	Tuesday • 13:30~16:00
Classroom	Laboratory of the Department of Operative Dentistry
Practice Room	Laboratory of the Department of Operative Dentistry, Clinic of the Niigata Hospital
Objective for Lectures	Graduate students study advanced knowledge and treatment techniques related to cariology and operative dentistry, and also learn the required knowledge to complete research projects and their thesis in this field. Furthermore, students aim to qualify as specialists in conservative dentistry and esthetic dentistry.
Contents and Plans for Lectures	Graduate students can obtain a deeper understanding in the fields of cariology and operative dentistry through lectures and reading papers, and this positions them into making improved research design and their thesis. Through laboratory practice, students master the accurate use of devices which are actually used in research. In the clinic, students practice adhesive dental treatment on the basis of the MI concept, and accumulate a number of clinical cases required to become a specialist in the fields of conservative dentistry and esthetic dentistry in the future. Additionally, students handle laser equipment for various types of dental treatment after lectures of basic laser treatment.
Evaluation Method for Grades	Students are evaluated by the attitudes in lectures and seminars, understanding the level of original papers, and originality of their opinions in the discussion. During research, students are evaluated by their research work, presentation at the meetings, and thesis preparation. The abilities of reception and treatment techniques for patients are evaluated in the clinic. Overall evaluation is decided by the results of the above evaluations.
Textbooks • Teaching Materials • References	<ol style="list-style-type: none"> 1) Summitt JB, Robbins JIV, Hilton TJ, Schwartz RS: Fundamentals of Operative Dentistry: A Contemporary Approach 3rd edition, Quintessence Publishing Co, Inc, Chicago. 2006. 2) Roulet JF. Wilson NHF, Fuzzi M: Advances in Operative Dentistry, Quintessence Publishing Co, Inc, Chicago, 2001. 3) Dietschi D. Spreafico R: Adhesive Metal-Free Restorations, Quintessence Publishing Co, Inc, Chicago, 1999. 4) Mjor IA: Pulp-Dentin Biology in Restorative Dentistry, Quintessence Publishing Co, Inc, Chicago, 2002.
Instructions for Course • Qualifications	Students should make a course design and possess strong enthusiasm to achieve this goal, and make efforts to improve treatment techniques.
Comments	Almost all of the equipment necessary for the research work is available in our laboratory, and special equipment can be used at the advanced research center.

Advanced Conservative Dentistry and Periodontology

Major Subject	Periodontology
Director • Position	SATO Soh • Professor
Teaching Members • Position	MOROZUMI Yuko • Associate Professor
Location of Laboratory	Niigata Hospital • 4th floor
Extension Phone Number • E-mail Address	3337 • s-sato@ngt.ndu.ac.jp
Teaching Methods	Lecture, reading papers by discussion
School Hours	Wednesday • 9:00~12:00
Classroom	Seminar room (4th Building • 2nd floor)
Practice Room	4th floor laboratory of the Niigata Hospital
Objective for Lectures	Programs places emphasis on the biological sciences which are critical to a rationale for periodontal therapy. A thorough knowledge of classic and current periodontal literature is stressed. A variety of courses in surgical anatomy, bone and connective tissue biology, oral pathology, histopathology, and the biomedical sciences prepare the student to render efficient and comprehensive dental care.
Contents and Plans for Lectures	Interdisciplinary seminars are offered and students perform and complete a research project under the supervision of a teacher and an advisory committee. Every student will produce a manuscript suitable for publication as part of the research experience. Regarding clinical aspects, students will perform periodontal non-surgical and surgical therapy include all types of regenerative surgery and the placement of dental implants.
Evaluation Method for Grades	Academic proficiency is tested through case presentations for periodontal diseases, patient treatment in clinic and accumulation of clinical cases, oral literature examinations. and research work.
Textbooks • Teaching Materials • References	<ol style="list-style-type: none"> 1) Lindhe J: Clinical Periodontology and Implant Dentistry: 3rd ed, Munksgaard, Copenhagen, 1997. 2) Newman MG, Takei H, Carranza F A: Carranza's Clinical Periodontology: 10th ed, WB Saunders Co, Philadelphia, 2006. 3) Annuals of Periodontology, 1996 World Workshop in Periodontics. Vol (1). Nov, 1996. 4) Journal of Periodontology 5) Journal of Clinical Periodontology
Instructions for Course • Qualifications	Students should have strong determination to make progress regarding research and to contribute to future dentistry.
Comments	No comments in particular.

Oral & Maxillofacial Growth and Development

Major Subject	Pediatric Oral Behavior Science
Director • Position	KUROKI Junko • Professor
Teaching Members • Position	SAKAI Sachiko • Associate Professor
Location of Laboratory	Niigata Hospital • 4th floor
Extension Phone Number • E-mail Address	3765 • jshimo@ngt.ndu.ac.jp
Teaching Methods	Lectures, Leading books and papers, discussion and experimental practice
School Hours	Thursday • 9:00~12:00
Classroom	4th floor laboratory of the Niigata Hospital
Practice Room	Niigata Hospital • 4th floor, 4th floor laboratory of the Niigata Hospital
Objective for Lectures	The aim of this lecture is to learn about the advanced knowledge and treatment techniques related to pediatric dentistry through the basic science and clinical study. Then each student's research thesis will be fixed and the dissertation will be undertaken. Furthermore, to get the license of the Japanese Society of Pediatric Dentistry medical specialist, students should study more specialized knowledge and treatment techniques and accumulate clinical cases.
Contents and Plans for Lectures	Through the discussion of lectures and reading papers, students should undertake the basic and clinical knowledge. Students should learn about the molecular biological and morphological technique required for fundamental study. Moreover, students should master the knowledge to summarize their research, to present the results of their research in the meeting and to submit them. Students should learn the clinical knowledge and skill required in order to acquire the license of the Japanese Society of Pediatric Dentistry medical specialist. through clinical treatment and experimental practice.
Evaluation Method for Grades	Grading is systematically undertaken using the following items: The level of understanding contents of the lectures and practice, degree of initiative and originality in one's opinion, research work, presentation at the meetings and clinical pediatric treatment
Textbooks • Teaching Materials • References	1) Text book for the lecture 2) The Japanese Journal of Pediatric Dentistry 3) Pediatric Dentistry 4) Pediatric Dental Journal 5) Journal of Dental Research
Instructions for Course • Qualifications	Ideally, student should have enthusiasm and inquiring minds regarding research and also should be able to contribute to the field of pediatric dentistry.
Comments	Environment for students will be provided as the need arises.

Oral & Maxillofacial Growth and Development

Major Subject	Orthodontics and Dentofacial Orthopedics
Director • Position	
Teaching Members • Position	OTA Shin • Senior Assistant Professor
Location of Laboratory	Medical Hospital (7th Building) • 4th floor
Extension Phone Number • E-mail Address	3302 • sako-kb@ngt.ndu.ac.jp
Teaching Methods	Lectures, reading books and papers by turns and discussion, basic laboratory practice for research
School Hours	Monday • 13:00~14:30
Classroom	4th floor laboratory of the Niigata Hospital
Practice Room	4th floor laboratory of the Medical Hospital (7th Building) 4th floor laboratory of the Niigata Hospital
Objective for Lectures	Students have opportunities to study special knowledges and treatment techniques related to orthodontics and dentofacial orthopedics. Then each student's research thesis will be fixed and the dissertation will be undertaken. Furthermore, to become a specialist, acknowledged by the Japanese Orthodontic Society, student should study more specialized knowledges and orthodontic treatment and accumulate clinical cases.
Contents and Plans for Lectures	Through lectures and reading papers and textbooks, students should extensively acquire special knowledges. Moreover, special knowledges and techniques for both research planning and the dissertation will be totally cultivated. Students will master orthodontic treatment techniques in clinic and the number of cases required to become a specialist for orthodontics should be accumulated.
Evaluation Method for Grades	Grading is systematically undertaken using the following items: The level of understanding contents of the lectures and practice, degree of initiative and originality in one's opinion, research work, presentation at the meetings and orthodontic treatments.
Textbooks • Teaching Materials • References	1) Reading List of Important References. 2) Proffit WR: Contemporary Orthodontics, Mosby Inc, Missouri, 2018. 3) Thomas M. Graber : Orthodontics : Current Principles and Techniques, Mosby Inc, Missouri, 1994.
Instructions for Course • Qualifications	Ideally, students should have strong enthusiasm and inquiring minds regarding research and also should be able to contribute to the field of orthodontics.
Comments	Student will be given many opportunities to make presentations and publication of papers and also given support both practically and emotionally.

Oral & Maxillofacial Surgery and Systemic Medicine

Major Subject	Oral and Maxillofacial Surgery
Director • Position	TANAKA Akira • Professor
Teaching Members • Position	SAKUMA Kaname • Associate Professor
Location of Laboratory	Niigata Hospital • 2nd floor
Extension Phone Number • E-mail Address	3240 • atanaka@ ngt.ndu.ac.jp
Teaching Methods	Lectures, basic laboratory practice for research
School Hours	Friday • 10:00~11:30am
Classroom	Professor rooms and laboratories (Niigata Hospital • 2nd floor)
Practice Room	2nd floor laboratories of the Niigata Hospital
Objective for Lectures	The purpose of students has to learn frontier dental science and modern medicine. Goals are clinical trials based on these researches. Diseases of maxillo-mandibular area should be considered combined with systemic disorders and make evidence by mean of experimental methods and prescribe on journals
Contents and Plans for Lectures	Scientific and systemic information is are required by lectures and discussion. Students should master cancer personalized chemotherapy, regenerative medicine, importance of the oral health care by lectures.
Evaluation Method for Grades	Students will be evaluated according to originality, advancement, and, additionally, results of presentations at academic congresses and publications of scientific journals.
Textbooks • Teaching Materials • References	Prints will be prepared based on present or modern information and knowledges.
Instructions for Course • Qualifications	Students are expected to contribute to the future development of the science of Oral and Maxillofacial Surgery with great passion and enthusiasm
Comments	Experimental research can be undertaken in the laboratory rooms and will correspond with lectures. All support for publication in the international journals is available as much as possible. Collaborations with basic and clinical groups are also available when needed.

Oral & Maxillofacial Surgery and Systemic Medicine

Major Subject	Clinical Examination
Director • Position	OHKOSHI Shogo • Professor
Teaching Members • Position	MICHIKAWA Makoto • Professor
Location of Laboratory	7th Building • 3rd floor
Extension Phone Number • E-mail Address	3738 • okoshi@ndu.ngt.ac.jp
Teaching Methods	Lectures, reading books and papers in by turns and discussion, basic laboratory practice for research
School Hours	Thursday • 14:00~15:30
Classroom	3rd floor Medical Office of 7th Building
Practice Room	1st and 2nd floor, Medical Department Outpatient Clinic and A Ward of 7th Building
Objective for Lectures	Students have opportunities to study advanced knowledge and diagnostic techniques related to oral diseases and systemic medicine. Then each student's research thesis will be fixed and the dissertation will be undertaken. Furthermore, to become dental specialists who can deal with systemic diseases associated with oral diseases, students should acquire more specialized knowledge, perfect diagnostic and treatment techniques and accumulate clinical cases.
Contents and Plans for Lectures	Through lectures and reading circles, students should extensively read papers and textbooks. Deep understanding will be accomplished through discussion. And also special knowledge for both research planning and undertaking the dissertation will be totally cultivated. During preliminary practice, students should become accustomed to the experimental equipment and materials used in regular research. Students should master special techniques through patient treatment in clinic, and the number of cases required to become a specialist for maxillofacial surgery should be accumulated.
Evaluation Method for Grades	Grading is systematically undertaken using the following items: Level of understanding of contents of lectures and practice, degree of initiative and originality in one's opinion, research work, presentation in meetings, patient treatment in clinic, accumulation of clinical cases and percentage of school classes attended.
Textbooks • Teaching Materials • References	1) Nishida J, Kojima T, Ookubo T Internal Medicine for Dentists Nankodo Co Ltd, Tokyo, 2018.
Instructions for Course • Qualifications	Ideally, students should have strong motivation and inquiring minds regarding research and also should be able to contribute to future dentistry.
Comments	Equipment and facilities for basic • clinical research are available. Students will be given many opportunities of presentation and publication of papers and will also be given support both practically and emotionally.

Statistics in Dentistry

Major Subject	Statistics in Dentistry
Director • Position	SHINKAI Koichi • Professor
Teaching Members • Position	
Location of Laboratory	Medical Hospital (7th Building) • 4th floor
Extension Phone Number • E-mail Address	3332 • shinkaik@ngt.ndu.ac.jp
Teaching Methods	Lecture and practice
School Hours	Wednesday • 13:30~16:00
Classroom	Seminar Room (4th Building, 2nd Floor)
Practice Room	Seminar Room (4th Building, 2nd Floor)
Objective for Lectures	The aim of this class is to acquire fundamental knowledge and techniques in statistics to plan, analyze and present research in dentistry.
Contents and Plans for Lectures	First half: lectures and practices of data collection, descriptive statistics, statistical tables and graphs, and basic inductive statistics using a scientific calculator Second half: lectures and practices of parametric tests, analysis of variance (including repeated measurement), multiple comparison procedures, nonparametric tests, correlation, simple linear regression, multiple regression analysis, power analysis, sample size estimation, and multivariate analysis using statistical software for Windows
Evaluation Method for Grades	Evaluation will be based on practice reports, understanding level of lecture contents, and attendance.
Textbooks • Teaching Materials • References	1) Kurihara S: Nyumon Toukeigaku, 1st ed., Ohmsha Ltd., Tokyo, 2011. 2) Scientific calculator with statistics mode by Sharp Corp. 3) Statistical analysis add-in software for Microsoft Excel: Excel Statistics BellCurve for Windows, SSRI. • Tsuji T ed.: Dental Statistics and Dental Epidemiology, Gakken Shoin, Tokyo, 1991. • Ichihara K: Statistics for Bioscience, Nankodo, Tokyo, 1991.
Instructions for Course • Qualifications	Bring a scientific calculator in the first half and a Windows notebook PC with above-mentioned add-in software in the second half.
Comments	Persons besides first-year graduate students may attend this class.

Core Classes/ Clinical Case Report (1)

Year • Semester • Credit	The first year • 1st Semester • 1.5 credits
Major Subject	Clinical Case Report (1)
Director • Position	KUROKI Junko • Professor
Location of Laboratory	Niigata Hospital • 4th floor
Extension Phone Number • E-mail Address	3765 • jshimo@ngt.ndu.ac.jp
Teaching Methods	80 minutes lecture using PC or slide projector.
School Hours	Thursday • 14:40~16:00
Classroom	Conference room (8th Building • 2nd floor)
Objective for Lectures	Students have opportunities to learn new topics in research, clinical diagnostics and newly advanced treatment techniques in clinic.
Evaluation Method for Grades	Grading is systematically undertaken using the following items: Understanding level of contents of the lectures, contents of report presented, results of oral examination and percentage of school classes attended.
Textbooks • Teaching Materials • References	A textbook will be introduced from teaching members. Other teaching materials such as reprints of the papers are also given from teaching members.

Contents and Plans for Lectures

No.	Date	Themes of the Lectures	Teaching Member • Position
1	5/9	Risk factors affecting conservative dentistry	MOROZUMI Toshiya • Professor
2	5/16	Esthetic adhesive restorations based on the mi concept	SHINKAI Koichi • Professor
3	5/23	Application of zirconia to fixed dental prosthesis	UEDA Kazuhiko Professor
4	5/30	Occlusion for removable dentures:	MIZUHASHI Fumi Professor
5	6/13	Periodontal treatment for the elderly	MOROZUMI Yuko • Associate Professor
6	6/20	Surgical periodontal treatment	SATO Soh • Professor
7	6/27	Diseases of oral medicine	OHKOSHI Shogo • Professor
8	7/18	Fundamental and clinical researches of the personalized anticancer drug chemotherapy for oral cancer	TANAKA Akira • Professor
9	7/25	General management of the compromised patient: Monitoring of vital signs, reading a biomonitor and learning How to perform emergency resuscitation.	OOHASHI Makoto • Professor
10	8/1	Dental treatment for people with special needs	SAKAI Sachiko • Associate Professor
11	8/29	Multimodal imaging of oral and maxillofacial lesions	OGURA Ichiro • Professor
12	9/5	Early treatment for malocclusion	OTA Shin • Senior Assistant Professor

Core Classes/ Clinical Case Report (2)

Year • Semester • Credit	The first year • 2nd Semester • 1.5 credits
Major Subject	Clinical Case Report (2)
Director • Position	TANAKA Akira • Professor
Location of Laboratory	Niigata Hospital • 2nd floor
Extension Phone Number • E-mail Address	3240 • atanaka@ngt.ndu.ac.jp
Teaching Methods	80 minutes lecture using PC or slide projector.
School Hours	Thursday • 14:40~16:00
Classroom	Conference room (8th Building • 2nd floor)
Objective for Lectures	Students have opportunities to learn new topics in research, clinical diagnostics and newly advanced treatment techniques in clinic.
Evaluation Method for Grades	Grading is systematically undertaken using the following items: Understanding level of contents of the lectures, contents of report presented, results of oral examination and percentage of school classes attended.
Textbooks• Teaching Materials•References	A textbook will be introduced from teaching members. Other teaching materials such as reprints of the papers are also given from teaching members.

Contents and Plans for Lectures

No.	Date	Themes of the Lectures	Teaching Member • Position
1	10/3	Application of photodentistry to caries treatment	SHINKAI Koichi • Professor
2	10/10	The latest histopathological diagnosis technique for the precancerous lesion and its clinical application	OKADA Yasuo • Professor
3	10/17	Appropriate use of antimicrobials in conservative dentistry	Morozumi Toshiya • Professor
4	10/24	Esthetic periodontal treatment	SATO Soh • Professor
5	10/31	Analysis and Assessment of mandibular condyle movement	WARATARAI Yuko • Senior Assistant Professor
6	11/7	Information obtained from medical interview and subsequent correspondence -Points to be aware of during dental treatment-	IGUCHI Asami • Associate Professor
7	11/14	Clinical application and evaluation of bone grafting materials	SUZUKI Masaya • Associate Professor
8	11/21	Evidence of the Oral health care	TANAKA Akira • Professor
9	11/28	Considering implant therapy from superstructure designs and materials	UEDA Kazuhiko • Professor
10	12/5	Oral change in development of children	KUROKI Junko • Professor
11	12/12	Orthodontic treatment in combination of anchoring screw	OTA Shin • Senior Assistant Professor
12	12/19	SPECT/CT for oral and maxillofacial diseases	OGURA Ichiro • Professor

Core Classes/ Principles of Oral Sciences

Year • Semester • Credit	The first year • 2nd Semester • 1.5 credits
Major Subject	Principles of Oral Sciences
Director • Position	SATOH Yoshihide • Professor
Location of Laboratory	5th Building • 3rd floor
Extension Phone Number • E-mail Address	2595 • ysatoh@ngt.ndu.ac.jp
Teaching Methods	80 minutes lecture using PC or slide projector.
School Hours	Thursday • 13:00~14:20
Classroom	Conference room (8th Building • 2nd floor)
Objective for Lectures	Students have opportunities to learn basic items and techniques for oral sciences
Evaluation Method for Grades	Understanding level of contents of the lectures, contents of report presented, results of oral examination and percentage of school classes attended.
Textbooks•Teaching Materials•References	A textbook will be introduced from teaching members. Other teaching materials such as reprints of the papers are also given from teaching members.

Contents and Plans for Lectures

No.	Date	Themes of the Lectures	Teaching Member • Position
1	5/9	Introduction of the equipment and apparatus in ARC	MIKAMI Masato • Professor
2	5/16	How to make an oral presentation	SATOH Yoshihide • Professor
3	5/23	How to write a thesis	SATOH Yoshihide • Professor
4	5/30	How to write and publish a manuscript	SATOH Yoshihide • Professor
5	6/13	Declaration of Helsinki and ethical examination and protection of personal information	KOMATSUZAKI Akira • Professor
6	6/20	Research plan, theme and protocol	SATO Soh • Professor
7	6/27	Basic and application of immunohistochemistry	OKADA Yasuo • Professor
8	7/18	Part I Principle of recombinant DNA	MORITA Takao • Professor
9	7/25	Part II PCR-RFLP (1)	OKA Shunya • Associate Professor IMAI Akane • Professor (Junior college) MIKAMI Masato • Professor FUKUI Kayoko • Senior Assistant Professor MORITA Takao • Professor TAKEZAWA Haruka • Associate Professor
10	8/1	Part IV Transformation	
11	8/29	Ethical aspects of animal experiments	KOBAYASHI Eizaburo • Associate Professor
12	9/5	Care and culture of laboratory animals	MIKAMI Masato • Professor