

Advanced Course in Orthodontics II

Lecture/Lab./Clinic Academic year 1,2 credits
2,4

[Keywords] Multibracket appliances, orthopedic appliances, functional appliances, lingual arch-appliances, retainers

[Academics] Masahiko Iijima, Tomohiro Fukunaga, Yuya Nakao

[Course aims]

Various orthodontic appliances are used to resolve dental, skeletal and functional problems in patients. One of the most commonly used appliances for correction of malpositioned teeth is the multibracket appliance. This appliance, which consists of brackets, tube, archwire and ligature wire, transmits the elastic force elicited by the archwire to the teeth, and moves the teeth into their proper positions. In contrast, orthopedic or functional appliances are applied to the patients with skeletal discrepancies in the growing stage. In this course, students are expected to understand the basic structures and treatment mechanisms of these orthodontic appliances, and basic skills for their fabrication and manipulation.

[Course objectives]

The objectives of the course are for students to be able to:

- 1) Explain orthodontic forces and their properties.
- 2) Explain histologic and molecular responses of the periodontal tissues and cranial bones to orthodontic forces.
- 3) Explain methods used to manipulate the materials and instruments used in orthodontic treatment.
- 4) Explain the structures and mechanisms of orthodontic appliances.
- 5) Obtain the basic skills need to fabricate and manipulate orthodontic appliances.
- 6) Explain the purposes of retention, fabrication and manipulation of retentive appliances.

[Course content]

| Class | Theme | Content | Academics |
|-------|---|--|--|
| 1 | Classroom lectures | 1) Orthodontic forces 2) Tissue responses to orthodontic forces 3) Orthodontic appliances (1) Lingual arch and multibracket appliances (2) Orthopedic and functional appliances (3) Rapid maxillary expansion and quad helix appliances (4) Retainers 4) Treatment of non-extraction and extraction cases 5) Retention | Masahiko Iijima Tomohiro Fukunaga Yuya Nakao |
| 2 | Laboratory courses focused on fabrication and manipulation of an orthodontic appliance, i.e., using a typodont for practice with a partial bracket appliance. | | Masahiko Iijima Tomohiro Fukunaga Yuya Nakao |

[Class implementation method]

Combination of face-to-face learning and distance learning

* Class implementation depends on the implementation policy of each department (graduate school), interdisciplinary studies, and school.

[Grading policies]

Your overall grade in class will be decided based on class attendance and reports.

[Textbook]

Students will be informed of which textbook to use.

[Reference book]

Students will be informed of which reference book to use.

(2026年度・大学院 歯学研究科 Graduate school of Dentistry)

[Preparation for course]

Students must understand the course objectives and prepare appropriately for classes.