Universidad Zaragoza

Academic Year/course: 2022/23

29331 - Orthodontics

Syllabus Information

Academic Year: 2022/23
Subject: 29331 - Orthodontics
Faculty / School: 229 - Facultad de Ciencias de la Salud y del Deporte
Degree: 442 - Degree in Odontology
ECTS: 12.0
Year: 4
Semester: Annual
Subject Type: Compulsory
Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, practice sessions, seminars, autonomous work and study, and tutorials.

4.2. Learning tasks

This course is organized as follows:

- **Lectures** (45 hours). Teachers expose theory contents (on-line) and student participation is encouraged in order to solve doubts. The teacher will use diagrams and illustrations through PowerPoint presentations. This material will be provided to students through photocopies. In certain topic sections, additional material will be provided and will encourage the realization of concept maps in order to achieve deeper learning.
- **Seminars** (15 hours). Seminars will be held, consisting on theory and practice workshops taught by the teacher or invited speakers to deepen topics of special interest. These activities will provide analysis and research topics. Search procedures of information via Internet will be established, methods of analysis and synthesis of knowledge will be taught. General basic principles of biostatistics will be explained. Work will be done individually or in groups.
- **Practice sessions** (40 hours). Due to the current situation, these sessions will take place online. Exercises and work done will be evaluated. Attendance at practice sessions is mandatory. Case studies of patients will be resolved and the various diagnostic criteria and treatment plan will be presented. The literature review includes searching, reading, study, abstract and oral presentation. Items discussed will be related to the topics being discussed in lectures. These items will come from publications in high impact journals, and classic topics such as orthodontic will be reviewed.
- **Autonomous work and study** (100 hours) Student work, including information search, job preparation, clinical cases and proposed exercises, study and exam preparation.
- **Tutorials.** Devoted to answer questions or provide a specific bibliography of a specific topic in relation to the

theoretical and practical contents of the course. Tutorials will be held individually or in groups, on-site or telematic via email.

4.3. Syllabus

This course will address the following topics:

THEORETICAL CONTENTS

SECTION 1. INTRODUCTION TO BLOCK ORTODONCIA

Concept, origin and evolution of Orthodontics

Orthodontic concept. Origin and historical evolution. Relationship with other branches of science. Periods. European and American schools. Orthodontics today. social and health needs.

SECTION 2. NORMALITY

Dental normality

Concept dental arch. Tooth position in the arcades. Differences between adult arcade and development. Arcade and form relationships with skeletal structures and function. Giroversión of permanent molars.

Occlusion concept. Sagittal, vertical and lateral relations. occlusal curves. interproximal relations. axial inclinations. Keys occlusion.

Facial and skeletal normality

Rating aesthetics: front and profile. anthropometric indexes and craniometric. Proportionality. auric proportions. Symmetry. dentolabial analysis. Smile line. dental aesthetics.

Functional normality

Different functions of the oral cavity: chewing, swallowing, breathing, speech and expression mimicry. postural head position.

SECTION 3. MALOCCLUSION AND BONE DYSPLASIAS

Concept of malocclusion and skeletal dysplasias

Definition of malocclusion. Definition of bone dysplasias. Orthodontic and orthopedic terminology.

Classification of malocclusions and skeletal dysplasias

Classification systems: Types of Dewey-Anderson. Angle classification. Classification Lisher. Simon classification. Carrea classification. Other systems.

Types of problems: Sagittal problems: class I, class II and class III. Cross-cutting issues: crossbite scissor bite. Vertical problems overbite and open bite. dental and functional asymmetries.

Sagittal problems syndrome Class I, Class II and Class III. crosscutting issues maxilla and mandible. Vertical problems: facial growth patterns or types. skeletal asymmetries.

Alterations in the growth of the jaw. Morphology and terminology. Hipocrecimiento and hipercrecimientos. Mandibular rotations.

SECTION 4: GROWTH

Overall growth

General. Concepts of growth and development. Growth pattern. Study methods of growth. Rating growth. Growth curves. Bone growth mechanisms. determinants of growth. Theories of growth.

Craniofacial growth

Vault, skull base, nasomaxillary complex and jaw growth.

SECTION 5: ERUPTION TOOTH

Tooth formation and mechanisms of tooth eruption

Tooth formation: general concepts. Study methods. Embryology. proliferative period. Calcification period. tooth movement and rash. tooth eruption in adults.

Mechanisms of tooth eruption. Rash assumption. vascular hypothesis. Hypothesis dental follicle. Root growth. Role of the periodontal ligament. Clinical aspects of the eruption.

Pathophysiology of eruption

General concepts and terminology. delayed eruption. local and systemic factors. Impaction and retention of the eruption. Transpositions and transmigration. Ankylosis. Diagnosis and generalities about treatment.

Primary teeth

Stages of tooth development in tooth eruption. Order and chronology. Positional changes during the eruption. Development of temporary arcades. Relationship with reflections, functions and craniofacial structures.

Mixed dentition - first phase

The eruption of first permanent molars. Normal patterns of eruption, distal step. molar class. The eruption of incisors. Normal patterns of the eruption of incisors. Impact on the arches and occlusion. Relationship with the craniofacial complex.

Mixed dentition - second phase and permanent dentition

The eruption of premolars and canines. Space drift. Normal patterns of the eruption. Impact on the arches and occlusion. Discrepancies later. Relationship with the craniofacial complex. Unerupted canine pathology: abnormal path eruption,

inclusions, and deductions, etiology and diagnosis. The eruption of second molars.

Adult permanent dentition

Maturation of the dental arches. The eruption of third molars. Aging dentition. Attrition. tooth loss. Periodontal disease. Consequences occlusion.

SECTION 6: DIAGNOSIS IN ORTHODONTICS

Clinical history and exploration

Clinical history and anamnesis. Intraoral examination: dental analysis and analysis of soft tissue (labial and lingual bridles, periodontal diagnosis of orthodontic problems: gingival recession and juvenile periodontitis). Extraoral examination. functional and parafunctional exploration. Exploring ATM: anatomy, centric relation, functional occlusion, ATM infant pathology, joint or muscle classification, differential diagnosis complementary examinations. Study models. Radiographs: panoramic, cephalometric and wrist. clinical picture.

Cephalometry

Introduction to cephalometric: concept and history. Various methods of cephalometric analysis and interpretations. Steiner cephalometric and Ricketts. Overlays.

Diagnostic integration and treatment plan

Integration of clinical data obtained. Drawing up a list of problems.

SECTION 7: ETHIOPATHOGENESIS OF BONE MALOCLUSIONS AND DYSPLASIAS

Etiopathogenesis of malocclusions and skeletal dysplasias: General factors.

Concept of balance and coping mechanisms. Classification of causes. skeletal muscle and dental factors. Forms of action. Genetics of malocclusion.

Etiopathogenesis of malocclusions and skeletal dysplasias: Local factors.

Dental anomalies of number, size, and shape. Tooth loss. Environmental influences. Harmful habits: digital, lip or suction objects, child swallowing and oral breathing. Lingual alterations.

SECTION 8: MOVEMENT IN ORTHODONTICS AND BIOMECHANICS

Dental movement

Tissue reaction to orthodontic forces: pressure side and voltage, direct and indirect bone resorption. Direct and indirect bone apposition. Types of force by tooth movement.

Unwanted effects of orthodontic forces: Iatrogenic, pain, root resorption and necrosis.

Biochemistry of orthodontic movement: bioelectric phenomena of alveolar bone. Prostaglandins and inflammatory mediators. Cytokines and bone remodeling.

Biomechanics

Basics: strength, centroid, moment of a force. Types of force. Systems forces. Deformation of bodies against a force. differential forces. Types of controlled movement. Friction.

Anchor concept. Anchor types and sources.

Orthodontic Materials

Materials used in Orthodontics: composition and types of alloys. Bands, brackets, elastomers, wires, and pliers. Allergic reactions in orthodontics

SECTION 9:

Neuro occlusal rehabilitation: Philosophy, AFMP angles and gothic arch.

Lateral movements, centric relation, chewing sides and oral growth influence on the posturology and later growth of the body.

Flat strips and carving for an occlusal adjustment.

PRACTICAL CONTENTS

MODULE 1. STUDY OF ARCADE AND OCCLUSION

Medical history and exploration. Study models

MODULE 2. INTRODUCTION TO RADIOGRAPHIC DIAGNOSTIC

Study panoramic radiography. Anatomical study of the lateral radiograph of the skull. Cephalometric tracing: points, planes, lines and axes. Cephalometric Steiner. Ricketts cephalometric. diagnostic synthesis

MODULE 3. MANAGEMENT MODULE WIRE

Figures thick steel. Figures thin steel. Preparation of steel arches 016. Production of steel arches with omegas 016

4.4. Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the Faculty of Health and Sports Sciences website and Moodle.

4.5. Bibliography and recommended resources

To consult the bibliography and recommended resources, you must access the *Recommended Bibliography* link.