

**COURSE DATA****Data Subject**

|                      |                |
|----------------------|----------------|
| <b>Code</b>          | 34720          |
| <b>Name</b>          | Orthodontics I |
| <b>Cycle</b>         | Grade          |
| <b>ECTS Credits</b>  | 12.0           |
| <b>Academic year</b> | 2021 - 2022    |

**Study (s)**

| <b>Degree</b>               | <b>Center</b>                      | <b>Acad. year</b> | <b>Period</b> |
|-----------------------------|------------------------------------|-------------------|---------------|
| 1206 - Grado de Odontología | Faculty of Medicine and Odontology | 4                 | Annual        |

**Subject-matter**

| <b>Degree</b>               | <b>Subject-matter</b> | <b>Character</b> |
|-----------------------------|-----------------------|------------------|
| 1206 - Grado de Odontología | 21 - Orthodontics     | Obligatory       |

**Coordination**

| <b>Name</b>               | <b>Department</b> |
|---------------------------|-------------------|
| GANDIA FRANCO, JOSE LUIS  | 131 - Stomatology |
| TARAZONA ALVAREZ, BEATRIZ | 131 - Stomatology |

**SUMMARY**

The compulsory subject Orthodontics I, is the first part of Orthodontics matter belonging to Dental Pathology and Therapy Module. This subject has a total of 18 ECTS credits that are divided between Orthodontics I, which is offered in 4th course of the Degree having 12 ECTS credits and Orthodontics II, which is offered in 5th course of the Degree having 6 ECTS credits.

Relatively independent of the rest of the subjects of the module in its diagnosis methods and classification, clinical treatment procedures and part of the basic sciences on which it is based, Orthodontics I provides a diachronic view of the dentition and the possibilities of changing the provision and occlusion of teeth in different moments of life of the patient.

It has a special relationship and some matches, without excluding relations with Basic Science, with Pediatrics Dentistry and Prosthetics, which orthodontics can add options or improve treatment. It also shares responsibility in some types of treatment with Oral Surgery and Orthognathic Surgery and Periodontics, especially regarding periodontium biology, and finally with Biomaterials Science and Epidemiology.



In the subject of Orthodontic I, basic knowledge and skills in morphological, etiopatogenic and descriptive diagnosis of occlusion and malocclusion are covered. The development of dentition, craniofacial growth, biomechanics and use of treatment materials, biology of tooth movement, general characteristics of treatment, appliances and risks associated with orthodontic therapy is studied. Specific models of clinical treatment of malocclusions are developed in the subject of Orthodontics II.

## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

#### 1206 - Degree in Dentistry :

R4-OBLIGATION TO HAVE SUCCESSFULLY COMPLETED THE COURSE

- 34696 - Human anatomy
- 34697 - Biology
- 34698 - Human physiology
- 34699 - Biochemistry
- 34702 - Psychology and communication
- 34703 - Biostatistics and public health

#### 1210 - Grado de Odontología 2012 :

- 34696 - Human anatomy
- 34697 - Biology
- 34698 - Human physiology
- 34699 - Biochemistry
- 34702 - Psychology and communication
- 34703 - Biostatistics and public health

### Other requirements

## OUTCOMES

### 1206 - Grado de Odontología

- Saber realizar un examen bucal completo, incluyendo las oportunas pruebas radiográficas y de exploración complementarias, así como la obtención de adecuadas referencias clínicas
- Conocer y aplicar el tratamiento básico de la patología bucodentaria más habitual en pacientes de todas las edades. Los procedimientos terapéuticos deberán basarse en el concepto de invasión mínima y en un enfoque global e integrado del tratamiento bucodental.
- Tomar e interpretar radiografías y otros procedimientos basados en la imagen, relevantes en la práctica odontológica.
- Realizar modelos diagnósticos, montarlos y tomar registros inter-oclusales.
- Elaborar las prescripciones de los productos sanitarios a medida «prótesis dentales» y «aparatos de ortodoncia y ortopedia dento-facial».
- Determinar e identificar los requisitos estéticos del paciente y de las posibilidades de satisfacer sus inquietudes.



- Planificar, determinar las características específicas de diseño, registros, prescripción, pruebas clínicas, colocación y ajuste clínico para puesta en servicio de mantenedores de espacio fijos y removibles y técnicas de ortodoncia interceptiva así como elementos activos extraíbles destinados a desplazar dientes o corregir mordidas cruzadas.
- Identificar y corregir hábitos bucales susceptibles de causar o exacerbar maloclusiones.

The theoretical classes should make the students know the analysis and interpretation of the records for the diagnosis and orthodontic treatment planning. Also, the student must know the biological bases of development of teeth and bone as the development of oral habits, malocclusion and knowing how to apply appropriate therapy to each of them.

Secondly, the realization of practical classes under proper supervision of the teachers, should make students acquire sufficient knowledge to conduct an appropriate radiological and cephalometric analysis with different cephalometric techniques, an analysis of study models from the diagnostic point of view, wire-bending of different thicknesses, and finally making removable orthodontic appliances with all its components.

## DESCRIPTION OF CONTENTS

### 1. INTRODUCTION AND DIAGNOSIS

1. Orthodontics: concept and objectives.
2. Historical evolution of orthodontics.
3. Nature and morphology of normocclusion.
4. Classification and characterization of Malocclusion.
5. Etiology and genetics of Malocclusion.
6. Medical history and examination in orthodontics.
7. Analysis of study cast models 1.
8. Odontometric analysis.
9. Analysis of the study models 2.
10. Facial morphological analysis 1. Esthetics assessment: forehead and profile.
11. Facial morphological analysis 2. Dentolabial dynamic analysis.
12. Pathophysiology of peridental soft tissues

### 2. ERUPTION

13. The formation of the dentition.
14. Mechanisms of tooth eruption.
15. Pathophysiology of the eruption.
16. Mixed dentition. First period of Tooth Replacement.
17. The mixed dentition. Second replacement period.
18. Eruption abnormalities 1.
19. Eruption abnormalities 2.
20. Maturation and aging of the dentition.



### 3. CEPHALOMETRY

21. Introduction to cephalometry.
22. Cephalometric methods. Basic concepts.
23. Lateral cephalometric anatomy.
24. Cephalometric methods. Norma Lateralis.
25. Cephalometric overlap.
26. Other types of cephalometric and imaging radiography.

### 4. DENTAL MOVEMENT AND BIOMECHANICS

27. Dental movement.
28. Variability factors of tooth movement.
29. Biomechanics 1. Basic concepts. Forces and vectors. Control of tooth movement. Systems of forces. Types of controlled movements.
30. Biomechanics 2. Static equilibrium. Active elements. Orthodontic metallurgy.
31. Biomechanics 3. Passive elements. Types. First, second and third order torques. Friction.
32. Biomechanics 4 Anchoring. Concept. Historical evolution. Classification. Anchor sources. Clinical application.

### 5. TREATMENT

33. Treatment plan. General considerations.
34. Functional alterations.
35. Treatment of Class I.
36. Treatment of Transverse Malocclusions.
37. Overbite.
38. Treatment of open bite.
39. Treatment of Sagittal Malocclusions. Class II, division 1.
40. Treatment of Sagittal Malocclusions. Class II, division 2.
41. Therapeutic extraction.
42. TMJ Alterations in the child.
43. Treatment of Sagittal Malocclusions. Class III.
44. Materials in Orthodontics.
45. Removable Plates.
46. Fixed appliances, PART 1.
47. Fixed appliances, PART 2.
48. Diagnostic synthesis. Steiner box. List of problems. VTO.
49. New techniques in orthodontics. Part I: Orthodontics with clear aligners. Digital fabrication of orthodontic appliances.
50. New techniques in orthodontics. Part II: Intraoral scanners. CBCT. 3d print.
51. Hygiene and prophylaxis in orthodontics.

### 6. GROWTH



- 52. Growth. Generalities.
- 53. Types of craniofacial growth.
- 54. Determining factors of growth.
- 55. Naso-Maxillary complex Growth.
- 56. Jaw Growth.
- 57. Integration of Dento-facial Growth and Etiology of Bone Dysplasias.
- 58. Patients with cleft lip and palate and other more frequent craniofacial malformations.
- 59. Orthopedic Devices.
- 60. Orthopedics of the jaw.
- 61. Classification of Dento-facial deformities.
- 62. Growth alterations of the jaw.

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## 9. PRACTICES

- PRACTICE 1. Wire bending.
- PRACTICE 2. Ideal arches.
- PRACTICE 3. Adam's hook.
- PRACTICE 4. Vestibular arch.
- PRACTICE 5. Analysis of cast models.
- PRACTICE 6. Analysis of models in mixed dentition.
- PRACTICE 7. Analysis of models in permanent dentition.
- PRACTICE 8. Facial analysis.
- PRACTICE 9 AND 10. Predetermination assembly (set up).
- PRACTICE 11. Hawley's plate.
- PRACTICE 12. Cephalometric anatomy.
- PRACTICE 13. Steiner's cephalometric analysis.
- PRACTICE 14. Ricketts cephalometric analysis.
- PRACTICE 15. Diagnosis of a complete clinical case
- PRACTICE 16. Diagnosis of a complete clinical case
- PRACTICE 17. Diagnosis of a complete clinical case.
- PRACTICE 18. Placement of metal brackets.
- PRACTICE 19. Indices for determining the need for treatment: DAI and IOTN.
- PRACTICE 20. Panoramic X-rays.

## 10. SEMINARS

- Seminar Eruptive Pathology I.
- Seminar Eruptive Pathology II.
- Seminar on transversal malocclusions.
- Vertical Malocclusions Seminar.
- Seminar Orthopedic treatment of class III malocclusions.
- Seminar Orthopedic treatment of class II malocclusions.
- CBCT Seminar.
- Fixed Equipment Seminar: TIP-EDGE.
- Fixed Appliance Seminar: SELF-LIGGED Brackets.
- Seminar Fixed Equipment: Straight arch.
- TMJ Treatment Seminar.



## WORKLOAD

| ACTIVITY                             | Hours         | % To be attended |
|--------------------------------------|---------------|------------------|
| Classroom practices                  | 80,00         | 100              |
| Theory classes                       | 66,00         | 100              |
| Laboratory practices                 | 34,00         | 100              |
| Development of group work            | 10,00         | 0                |
| Development of individual work       | 10,00         | 0                |
| Study and independent work           | 50,00         | 0                |
| Readings supplementary material      | 20,00         | 0                |
| Preparation of evaluation activities | 20,00         | 0                |
| Resolution of case studies           | 10,00         | 0                |
| <b>TOTAL</b>                         | <b>300,00</b> |                  |

## TEACHING METHODOLOGY

1. **THEORETICAL CLASSES:** 3 hours per week throughout the course. The class is an oral exposure by the teacher of basic and new concepts. It will be done through active participation of students to facilitate their knowledge acquisition.
2. **PRACTICAL CLASSES:** 3 hours per week throughout the course. Groups will be of 40 students. Practices are preferably a training activity aimed to the practical application of theoretical knowledge and training in some necessary orthodontics skills. The student will have a practical guide (teacher) who will facilitate the work and monitor the content of the practices clearly and simply.
3. **LABORATORY CLASSES:** 2 hours per week during the second semester. Groups will be of 16 students who will diagnose cases with complete records and draw up various treatment plans that will be presented to their peers and discussed collectively in class. This type of exercise is also made in the subject of Orthodontics II. Moreover, the possibilities and limitations of treatment procedures will be discussed in the study of the clinical cases. It may also carry out a monograph.

We intend to have a program with some scope for adaptation to the evolution of each concrete course.

## EVALUATION

Written partial exam of multiple-choice test questions in January. Eliminate subject from a grade greater or equal to 70% of the total questions.

Final written exam of multiple-choice test questions on first call and on second call. The final grade will be the average between the scores of the theoretical exams (60%), the grade obtained in the participation in seminars (10%) and the obtaining of the



skills assessment in the practical and laboratory sessions (30%).

It is a requirement to access the advance notice of this subject, that the student has completed the use of all their practices.

## REFERENCES

### Basic

- Ortodoncia. Principios y técnicas actuales Graber/Vanarsdall/Vig 5ª Edición
- Ortodoncia Contemporánea, 5ª edición Autor (s): Proffit/Campos/Sarver Fecha de publicación: 04 de mayo 2012 Pie de imprenta: Mosby ISBN: 9780323083171
- Ortodoncia clínica y terapéutica Jose Antonio Canut Brusola 2ª ed

### Additional

- Biomecánica en ortodoncia clínica. Ravindra Nanda - 30/06/1998 - 308 páginas.
- Tratamiento Ortodóncico y Ortopédico Dentofacial Rakosi/Graber 2012.
- Biological Mechanisms of Tooth Movement Vinod Krishnan y Zeed Davidovitch 2009.

## ADDENDUM COVID-19

**This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council**

Seguendo las recomendaciones del Ministerio, la Consellería y el Rectorado de nuestra Universidad, para el período de la "nueva normalidad", la organización de la docencia para el primer y segundo cuatrimestre del curso 2021-22, seguirá un modelo híbrido, donde tanto la docencia teórica como práctica se ajustará a los horarios aprobados por la CAT pero siguiendo un modelo de Presencialidad / No presencialidad en la medida en que las circunstancias sanitarias y la normativa lo permitan y teniendo en cuenta el aforo de las aulas y laboratorios docentes. Se procurará la máxima presencialidad posible y la modalidad no presencial se podrá realizar mediante videoconferencia cuando el número de estudiantes supere el coeficiente de ocupación requerido por las medidas sanitarias. De manera rotatoria y equilibrada los estudiantes que no puedan entrar en las aulas por las limitaciones de aforo asistirán a las clases de manera no presencial mediante la transmisión de las mismas de manera síncrona/asíncrona via "on line".