# 1. BASIC INFORMATION

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|---|---|
| **Course** | Documentation and Introduction to Research Methodology in Dentistry |
| **Degree program** | Dentistry 100% English |
| **School** | Biomedical Sciences and Health |
| **Year** | First Year |
| **ECTS** | 3 ECTS |
| **Credit type** | Basic |
| **Language(s)** | English / Spanish |
| **Delivery mode** | In classroom learning |
| **Semester** | First semester / Second semester |
| **Academic year** | 2024/2025 |
| **Coordinating professor** | David Ballesteros Plaza |
| **Professors** | Vinatha Sreeramkumar, Ana Handler, Sara Clemente, David Ballesteros |

# 2. PRESENTATION

Dentistry, as a profession within Biomedical Sciences, requires the training of individuals not only with specific skills geared towards job performance but also towards scientific investigation.

The present course, **Documentation and Introduction to Research Methodology in Dentistry**, initiates the future dentist in the knowledge of resources which will enable him or her to actively participate in research projects. Thus, the future professional will be able to share with the scientific community his/her professional findings as well as to be involved in autonomous life-long learning keeping up to date with the latest techniques and research findings applicable to her or his future professional activity.

# 3. COMPETENCIES AND LEARNING OUTCOMES

**Core competencies:**

- CB2: That students know how to apply their knowledge to their work or vocation in a professional manner and possess the skills that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study.
- CB3: That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical issues.
- CB4: That students can transmit information, ideas, problems and solutions to a specialized and non-specialized public.
- CB5: That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

**Cross-curricular competencies:**

- CT1: Autonomous learning: Process that allows the person to be the author of their own development, choosing the paths, the strategies, the tools and the moments that they consider most effective to learn and independently implement what they have learned. The autonomous student, in short, selects the best strategies to achieve their learning objectives.
- CT4 - Capacity for analysis and synthesis: Analysis is the method of reasoning that allows the decomposition of complex situations in their constituent parts; also evaluate other alternatives and perspectives to find optimal solutions. The synthesis seeks to reduce complexity in order to understand it better and / or solve problems.
- CT5: Ability to apply knowledge to practice: Ability to use the knowledge acquired in the academic field in situations as close as possible to the reality of the profession for which they are being trained, for example, by linking theoretical foundations with its application to real problems of everyday life, address problems and situations close to professional activity or solve real issues and / or problems.
- CT7 - Awareness of ethical values: Ability to think and act according to universal principles based on the value of the person that are directed to their full development and that entails the commitment with certain social values.
- CT9 - Skills in interpersonal relationships: Interacting positively with other people verbally and nonverbally through assertive communication, understood by this, the ability to express or convey what you want, what you think or feel without upsetting, attacking or hurting the other person's feelings.

**General competencies:**

- CG1: to know the essential elements of the dentist profession, including ethical principles and legal responsibilities.
- CG8: to know how to share information with other health professionals and work as a team.
- CG9: to understand the importance of maintaining and using records with patient information for further analysis, preserving the confidentiality of the data.
- CG18: to know, critically assess and know how to use the sources of clinical and biomedical information to obtain, organize, interpret and communicate scientific and health information.
- CG19: to understand the scientific method and have critical capacity to assess established knowledge and novel information. To be able to formulate hypotheses, collect and critically evaluate information to solve problems, following the scientific method.

**Specific competencies:**

- CE5: to understand the scientific method and have critical capacity to assess established knowledge and novel information.

**Learning outcomes:**

- LO1: to know different ethical aspects related to scientific publication.
- LO2: to understand the concept of Science and the Scientific Method
- LO3: to know and be able to use research and bibliographic tools. Acquisition of basic bibliographic concepts and terminology.
- LO4: to handle different specific tools to access information in general and in particular technical academic articles in the field of dentistry.

- LO5: to identify the difference and the use of various types of scientific and technical documents, in terms of content, objectives and structure.
- LO6: to manage the concepts for the realization of theses, research projects, books and different types of scientific publications.
- LO7: to have access to and manage sources of scientific information in the field of Dentistry.
- LO8: to become familiar with the relevant scientific publications in Dentistry.
- LO9: to analyze the research topics in dentistry and to identify the most common research designs.
- LO10: to develop skills and abilities related to scientific research in dentistry.
- LO11: to be able to initiate and establish the basic framework for a simple scientific research in dentistry, identify a problem to be investigated, review the literature and define a conceptual framework for research, develop a hypothesis, decide on the method of research to apply, collect the results and analyze them.
- LO12: to be able to use and identify the technical requirements to analyze and produce scientific documents.

The following table shows the relationship between the competencies developed during the course and the learning outcomes pursued:

| Competencies | Learning outcomes |
|---|---|
| **CB2, CB3, CB4, CB5, CT1, CT5, CT7, CT9, CE1, CE9.** | LO1: to know different ethical aspects related to scientific publication. |
| **CB2, CB3, CB4, CB5, CT1, CT4, CT5, CT7, CT9, CE1, CE8, CE9, CE18, CE19.** | LO2: to understand the concept of Science and the Scientific Method. |
| **CB2, CB3, CB5, CT1, CT4, CT5, CE1, CE9, CE18.** | LO3: to know and be able to use research and bibliographic tools. Acquisition of basic bibliographic concepts and terminology. |
| **CB2, CB3, CB5, CT1, CT4, CT5, CE1, CE9, CE18.** | LO4: to handle different specific tools to access information in general and in particular technical academic articles in the field of dentistry. |
| **CB2, CB3, CB5, CT1, CT4, CT5, CE1, CE9, CE18, CE19.** | LO5: to identify the difference and the use of various types of scientific and technical documents, in terms of content, objectives and structure. |
| **CB2, CB3, CB4, CB5, CT1, CT4, CT5, CT7, CT9, CE1, CE8, CE9, CE18, CE19.** | LO6: to manage the concepts for the realization of theses, research projects, books and different types of scientific publications. |
| **CB2, CB3, CB5, CT1, CT4, CT5, CE1, CE9, CE18, CE19.** | LO7: to have access to and manage sources of scientific information in the field of Dentistry. |

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|---|---|
| **CB2, CB3, CB5, CT1, CT4, CT5, CE1, CE9, CE18, CE19.** | LO8: to become familiar with the relevant scientific publications in Dentistry. |
| **CB2, CB3, CB5, CT1, CT4, CT5, CT7, CE1, CE8, CE18, CE19.** | LO9: to analyze the research topics in dentistry and to identify the most common research designs. |
| **CB2, CB3, CB4, CB5, CT1, CT4, CT5, CT7, CT9, CE1, CE8, CE9, CE18, CE19.** | LO10: to develop skills and abilities related to scientific research in dentistry. |
| **CB2, CB3, CB4, CB5, CT1, CT4, CT5, CT7, CT9, CE1, CE8, CE9, CE18, CE19.** | LO11: to be able to initiate and establish the basic framework for a simple scientific research in dentistry, identify a problem to be investigated, review the literature and define a conceptual framework for research, develop a hypothesis, decide on the method of research to apply, collect the results and analyze them. |
| **CB2, CB3, CB4, CB5, CT1, CT4, CT5, CT7, CT9, CE1, CE8, CE9, CE18, CE19.** | LO12: to be able to use and identify the technical requirements to analyze and produce scientific documents. |

# 4. CONTENT

The subject is organized into three learning units, which, in turn, are divided into specific topics:

UNIT 1. SCIENTIFIC DOCUMENTATION

-Sources of information. Primary and secondary sources.

-Bibliographic data bases in Health Sciences

-Academic honesty: Plagiarism. Vancouver style for referencing.

UNIT 2. THE SCIENTIFIC METHOD

-Introduction of the concept Research in Dentistry. Definition of a problem. Literature review. Objectives. Hypothesis. Experimental design. Data collection. Analysis of the results.

UNIT 3. PUBLICATION OF SCIENTIFIC INFORMATION

-Types of scientific documents.

-The scientific poster.

-The scientific article.

-Ethics and moral values applied to scientific investigation. Ethics in scientific publications.

# 5. TEACHING-LEARNING METHODOLOGIES

The types of teaching-learning methodologies used are indicated below:

- Master class
- Cooperative learning
- Problem based learning
- Project based learning

The application of these methodologies can be modified depending on the planning of the subject and the adequacy of the methodologies to their suitability for the optimal use of the contents by the students.

# 6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the number of hours the student will spend on each one:

**Campus-based mode:**

| Actividad formativa | Número de horas |
|---|---|
| **Critical analysis of scientific articles** | 3 h |
| **Problem solving** | 2 h |
| **Master clases** | 20 h |
| **Research** | 18 h |
| **Knowledge tests** | 2 h |
| **Study and autonomous work** | 30 h |
| **TOTAL** | 75 h |

# 7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade:

**Campus-based mode:**

| Assessment system | Weight |
|---|---|
| **Knowledge based tests** | 50% |
| **Compulsory activities** | 50% |

When you access the course on the *Campus Virtual*, you'll find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.

## 7.1. First exam period

To pass the course in the first exam period, you must obtain a final course grade of at least 5.0 out of 10.0 (weighted average).

In any case, you will need to obtain a grade of at 5.0 in the final exam in order for it to count towards the final grade along with all the grades corresponding to the other activities.

In the Article 1 - 4. of the regulations for the assessment of accredited undergraduate degrees at universidad europea de Madrid it is written:

Students taking campus-based studies are required to **demonstrate that they have attended at least 50% of their classes**. Such attendance forms an essential part of the assessment process and is necessary to give the student the right to receive guidance, assistance and academic supervision from the professor. For such purposes, students must use the technological system put in place by the University to accredit their daily attendance at each of their classes. This system shall furthermore ensure that objective information is gathered regarding the active role of the student in the classroom. The failure to use the methods proposed by the University to demonstrate 50% attendance will give the professor the right to grade the course as a fail under the ordinary exam period. The foregoing does not affect other requirements of higher attendance percentages that each school may establish in their teaching guides or internal regulations.

Online attendance implies having the videocamera connected during the class and having the microphone available when it is required.

In order to pass the subject in ordinary session, the **process of continuous evaluation** of the different training activities must be overcome. The general scheme of evaluation, divided by blocks, is the following:

| Evaluable block | Evaluation system | Weight (%) |
|---|---|---|
| **1** | Knowledge verification test | 50 |
| **2** | Compulsory and evaluable activities | 50 |

It is essential that **the qualification of each evaluable block is equal to or greater than 5**. The final grade of the student will be obtained from the weighting of the partial notes of each of the blocks, as indicated in the table and detailed below. **In the case of not having passed any** of the evaluable blocks, the score in the minutes will always be that of the block with the lowest score. The grades published in the virtual campus will be **provisional** until the review of the test.

The evaluation methodology for the two evaluable blocks may be based on: multiple-choice questions, short questions, open questions with and without extension limitation, correspondence questions, questions with embedded answers, information synthesis tables, papers, oral presentations, etc.
In the event of a **modification of the evaluation date**, according to the application of the rules for changing the date of evaluable tests, the format of said test may vary with respect to the general call.
• Evaluation of objective knowledge tests (50%):
**An** objective test will be carried out.
**In the objective test the student must obtain a grade of at least 5.0 to overcome the block.**
• Evaluation of evaluable and compulsory activities (50%):
The attendance to the activities, and the elaboration of requested works is obligatory to be able to surpass this block. The evaluation of the activities will be done demonstrating the knowledge and skills acquired during them. In the virtual campus the evaluation modality of each one of these activities will be detailed before its realization.

**The rating of the block will correspond to a weighted measure of all the included activities. It is necessary to obtain a minimum grade of 5 in this block to overcome this section and be able to average with the other block of the subject.**

## 7.2. Second exam period

To pass the course in the second exam period, you must obtain a final grade of at least 5 out of 10 (weighted average).

In any case, you will need to obtain a grade of 5.0 or above in the final exam in order for it to count towards the final grade along with all the grades corresponding to the other activities.

The student must deliver the activities not successfully completed in the first exam period after having received the corresponding corrections from the professor, or those that were not delivered in the first place.

# 8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

| Assessable activity | Evaluation criteria | Date |
|---|---|---|
| **Reading and presenting an article** | •Demonstrates reading and understanding of a research article and explains it in an understandable way to peers. | Week 3-4 |
| **Research proposal*** | • Is able to initiate and establish the basic framework for a simple scientific research in dentistry, identifies a research problem, reviews the literature and adequately defines a conceptual framework for the research, develops a hypothesis, decides on the research method to be applied and develops a research proposal | Week 7 |
| **Peer review** | • Is able to analyse a scientific paper and suggest areas for improvement and appreciate its strengths, makes constructive criticism of the work of other peers. | Week 11 |
| **Scientific poster** | • Develops a simple scientific investigation in dentistry, understands the concept of science and the scientific method, presents his/her results in written form in a document with a structure and content typical of scientific documents and academic writing in science. | Week 12 |
| **Presentation of the research** | • Presents a research project in an appropriate oral form to the audience, with the help of a projection. | Week 13 |
| **Final test** | • Demonstrates knowledge of the aspects explained in the subject, as well as his/her own research project and transmits it adequately in written form. | Week 16-17 |

* It is compulsory to pass the activity Research proposal to be assessed in the following activities of the research. In case of failing the activity Research proposal, in addition, the part of the final objective knowledge test on the research project will be evaluated as 0.

This schedule may be subject to changes for logistical reasons relating to the activities. The student will be notified of any change as and when appropriate.

The following timetable shows the activities that can be assessed and their relative weight in the final grade of the course.

| Assessable activity | Learning unit | Date (week) | Weight(%) |
|---|---|---|---|
| **Reading and presenting an article** | UA1, UA2, UA3 | Week 3-4 | +0-0.5 in the proposal |
| **Research proposal** | UA1, UA2, UA3 | Week 7 | 10 |
| **Peer review** | UA1, UA2, UA3 | Week 11 | 12.5 |
| **Scientific poster** | UA1, UA2, UA3 | Week 12 | 15 |
| **Presentation of the research** | UA1, UA2, UA3 | Week 13 | 12.5 |
| **Final test** | UA1, UA2, UA3 | Week 16-17 | 50 |

# 9. BIBLIOGRAPHY


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- Kris E. Berg, Richard W. Latin. Essentials of research methods in health, physical education, exercise science, and recreation. 2008. LWW. ISBN-13: 978-0781770361 (Q180.55 .M4 B47 2008).

- María Eugenia Díaz Sánchez, Aida Márquez Pérez. A manual for writing research papers: with a guide to using Internet Sources. 2001. ISBN: 848910929X (LB2369.D53 2001).


Internet resources:

- https://www.ncbi.nlm.nih.gov/pubmed/
- https://biblioteca.universidadeuropea.com/friendly.php?s=madrid
- http://owl.english.purdue.edu/
- http://www.icmje.org/

## 10. EDUCATIONAL GUIDANCE AND DIVERSITY UNIT

From the Educational Guidance and Diversity Unit we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the students inclusions with specific educational needs, universal accessibility on the different campuses of the university and equal opportunities.

From this unit we offer to our students:

1. Accompaniment and follow-up by means of counselling and personalized plans for students who need to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made in terms of methodology and assessment for those students with specific educational needs, pursuing an equal opportunities for all students.
3. We offer students different extracurricular resources to develop different competences that will encourage their personal and professional development.

4. Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree.

Students in need of educational support can write to us at:
orientacioneducativa@universidadeuropea.es

## 11. ONLINE SURVEYS

Your opinion matters!

The Universidad Europea encourages you to participate in several surveys which help identify the strengths and areas we need to improve regarding professors, degree programs and the teaching-learning process.

The surveys will be made available in the “surveys” section in virtual campus or via e-mail.

Your assessment is necessary for us to improve.

Thank you very much for your participation.