COURSE DATA

DATA SUBJECT

Code: 34703
Name: Biostatistics and public health
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1206 - Degree in Dentistry	Facultat de Medicina i Odontologia	1	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1206 - Degree in Dentistry	Statistics	BASIC

COORDINATION

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SUMMARY

The skills acquired by the student taking this subject will allow him to combine content knowledge of Biostatistics with Epidemiological and Public Health Methodology detailed in the content description, which will allow him in subsequent courses a tool to investigate, carry out field work, interpret studies and take related subjects such as Preventive and Community Dentistry or other elective and related subjects that are also related.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

There is no enrollment restriction with other subjects in the curriculum.

COMPETENCES / LEARNING OUTCOMES

1206 - Degree in Dentistry

Know how to use the sources of clinical and biomedical information available, and value them critically in order to obtain, organise, interpret and communicate scientific and sanitary information.

DESCRIPTION OF CONTENTS

1. THEORY

1. Biostatistics and public health: fundamental aspects in Dentistry
2. Health Demography. Concept and sources of information. Static demographics
3. Frequency Measurements: Mortality Measurement
4. Frequency Measurements: Morbidity Measurement
5. Dynamic Demography. Demographic and epidemiological trends
6. Systems of health information. Epidemiological surveillance
7. Applications of statistics in epidemiology and dentistry. Descriptive statistics
8. Inferential statistics. Hypothesis contrast. Comparisons of categorical data. Comparisons of means.
9. Causality.
10. Sample size in epidemiological studies. Alpha and beta errors
11. Correlation. Logistic regression. Multivariate linear regression
12. Descriptive epidemiology. Cross-sectional studies
13. Case-control studies.
14. Cohort Studies.
15. Experimental Studies.
16. Association and Potential Impact Measures.
17. Assessment of diagnostic tests.
18. The major groups of communicable diseases. Health Diagnosis. Control and eradication. Emerging diseases. Health regulations.
19. Fundamental bases of prevention of communicable diseases. Actions on sources of infection.
20. Actions on transmission mechanisms. Disinfection-sterilization techniques. Sanitary waste.
21. Actions on the receptive individual. Vaccines.
22. Main diseases by direct contagion. Hepatitis.
23. AIDS Biological risks in the work environment. Accidental puncture.
24. Respiratory transmitted diseases.
25. Epidemiology of cardiovascular diseases.
26. Malignant tumours. Epidemiology and preventive medicine.
27. Caries and periodontal disease as a public health problem.
28. Tobacco and oral health. Smoking cessation. Treatment of nicotine dependence.
29. Protection and promotion of health at different ages. Health screening. Prevention levels.
30. Health education. Principles and methods.
31. Health models. General Health Law.

2. COMPUTER PRACTICES

SESSION 1: CREATION OF A DATABASE USING SPSS:

- Creating a data file
- Introduction of variables.
- Difference between type of qualitative and quantitative variables.
- Recoding quantitative variables into qualitative ones
- Recoding qualitative variables into qualitative ones with different levels
- Operateing with variables.

SESSION 2: STATISTICAL ANALYSIS. DESCRIPTIVE STATISTICS:

- Measures of central tendency
- Measures of dispersion
- Graphical representation of data
- Measured of shape. Graphic study of the normality distribution of the variables. Application of statistical tests to contrast the null hypothesis of normality of the variables.
- Measurements position.
- Graphical representation of data.

SESSION 3: STATISTICAL ANALYSIS. ANALYTICAL STATISTICS

- Chi squared. Risk estimation.
- Comparison of means of related samples regarding qualitative variables with two levels.
- Comparison of independent sample means.
- Comparison of means of related samples regarding qualitative variables with more than two levels.
- Statistical inference. Interpretation of the p value of the confidence intervals.

SESSION 4: STUDY OF THE RELATIONSHIP BETWEEN QUANTITATIVE VARIABLES

- Correlation analysis. Interpretation of the Pearson correlation coefficient. Interpretation of the coefficient of determination. ANOVA.
- Simple linear regression analysis. Interpretation of the regression coefficient.
- Multiple regression analysis

SESSION 5: EXERCISES WITH DATABASE. STATISTIC ANALYSIS

- Analysis of the dispersion and shape of quantitative variables
- Quantiles.
- Resolution of questions related to the previous analysis.
- Differences in means of related samples.
- Difference of means of independent samples and paired samples.
- Making a contingency table. Interpretation of results and corresponding statistics.

3. SEMINAR PRACTICES

SEMINAR 1: CREATION OF QUESTIONNAIRES.

- Design of questionnaires to collect basic information from epidemiological studies
- Sociodemographic and lifestyle variables
- Validation of questionnaires.

SEMINAR 2: DISEASE FREQUENCY MEASURES

- Risk, prevalence and incidence rate
- Morbidity rates and mortality rate
- Survival, vital table.

SEMINAR 3: TOBACCO: TOBACCO CESSATION

- Systematized health advice in dental care
- Recording activities to increase the smoker's motivation and effectiveness, as well as for use in reduction therapy. Application test with assessment of the degrees of physical/psychological dependence and motivation.
- Pharmacological therapies in smoking cessation. Therapy psychological. Group therapy.
- Relapse prevention and monitoring strategies
- Smoking treatment with practical cases.

SEMINAR 4: EPIDEMIOLOGICAL STUDY OF AN EPIDEMIC OUTBREAK

- Epidemic/Outbreak of disease concept.
- Origin of the causal agent, mode of spread, choice of control strategy.
- Phases of outbreak investigation with basic descriptive data, generation of hypotheses and design of specific analytical studies to identify causal factors. Attack rate, expected cases.

SEMINAR 5: HEALTH DEMOGRAPHY I

- Sources and use of demographic data.
- Migration and occurrence of the disease.

SEMINAR 6: HEALTH DEMOGRAPHY II

- Forms and interpretation of demographic data.
- Standardization techniques rates due to demographic differences.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours

Theory	33,00
Computer classroom practice	15,00
Classroom practices	12,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	20,00
Independent study and work	70,00
Preparation of lessons	0,00
Preparation for assessment activities	0,00
Resolution of case studies	0,00
Total hours	**90,00**

TEACHING METHODOLOGY

The theoretical contents will be taught through master classes discussed with the students, encouraging student participation through questions.

In the practical sessions, in addition to using a methodology based on learning through problem solving and posing real situations (seminars), the student will use computer programs that will help them obtain results that must be interpreted according to the theoretical knowledge acquired (Computer Practices). Group work will be encouraged that will allow the development of coherent and logical communication and oral expression skills.

The gender perspective, respect for diversity and the sustainable development goals (SDGs) will be incorporated into teaching, whenever possible.

EVALUATION

The exam will consist of 10 questions, 8 of theoretical content and 2 of practical content, each question will be qualified with a maximum of 1 point and will account for 80% of the overall mark. In this section it will be observed as a criterion not to have 3 or more questions not answered or with a mark of 0 and the student will have to pass 50% (4 points), to add 20% (2 points) corresponding to the presentation of a work on the subject.

Attendance at practical activities is mandatory. The student is considered to meet this requirement if he or she has attended a minimum of 80% of these activities and has adequately justified the impossibility of attending the remaining sessions due to the occurrence of a cause of force majeure. It will be essential to comply with this requirement to pass the subject.

Students are reminded of the importance of carrying out evaluation surveys to all teachers of the degree subjects.

REFERENCES

BASIC

- GORDIS Leon (2005) Epidemiología. 5 ed. Ed. Elsevier
- ARGIMON JM y JIMÉNEZ J (2004) Métodos de Investigación. Clínica y Epidemiológica.4ed. Elsevier España
- Martínez González, M-A.; Sánchez-Villegas, A.; Toledo Atucha, E.A.; Faulin, J (2013) Bioestadística amigable. 3ª Edición. Eselvier. España.

RECURSOS e-Salut:

- Clinical Key Student Medicina, Odontologia y Enfermería -[https://uv-es.libguides.com/RecursosSalut]
- Acces Medicina -[https://uv-es.libguides.com/Access_Medicina]
- Médica Panamericana -[https://uv-es.libguides.com/Medica_Panamericana]

ADDITIONAL

- ROTHMAN, K.J. (1987) Epidemiología moderna. Ed. Díaz de Santos. Madrid -
- PIEDROLA GIL, G. i cols. (2015) Medicina Preventiva i Salut Pública. 12ª ed. e. Masson. Madrid