Information about the subject

Degree: Bachelor of Science Degree in Medicine

Faculty: Faculty of Medicine and Health Sciences

Code: 341102 **Name:** Biostatistics

Credits: 6,00 **ECTS Year:** 1 **Semester:** 2

Module: Social Medicine, Communication Skills and Initiation to Research

Subject Matter: Statistics **Type:** Basic Formation

Field of knowledge: Health Science

Department: -

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:

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| 341B | Francisco Javier Arteaga Moreno **(Responsible Lecturer)** | francisco.arteaga@ucv.es |

Module organization

Social Medicine, Communication Skills and Initiation to Research

Subject Matter	ECTS	Subject	ECTS	Year/semester
Communication Skills	3,00	Laboratory of Clinical Interview and Communication Skills	3,00	3/1
Social Medicine	15,00	Family and Community Medicine	3,00	5/2
		Legal Medicine and Toxicology	6,00	5/1
		Preventive Medicine and Public Health	6,00	4/2
Research inicialization	9,00	History of Medical Science, and Medical Documentation and Terminology	6,00	2/1
		Laboratory of Research Methodology	3,00	4/1
Statistics	6,00	Biostatistics	6,00	1/2
Ethics and professional issues	12,00	Bioethics and Medical Deontology	6,00	4/1
		Science, Reason and Faith	6,00	2/2
Health management	3,00	Healthcare Management	3,00	4/1
English	6,00	Medical English	6,00	1/1
Ethics	6,00	Ethics and Social Morality	6,00	2/1
Antropology	6,00	Medical Anthropology	6,00	1/1

Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

R1   Know the basics of biostatistics and its application to the medical sciences. Be able to design and perform simple statistical studies using computer programs and interpret the results.

R2   Design of simple studios.

R3   Hypothesis formulation.

R4   Understand and interpret statistical data in the medical literature.

R5   Know and correctly apply the statistical concepts applied to diagnostic tests (relative risk, specificity, sensitivity, ...)

R6   Understand and apply the basics of random variable and probability distribution, know the main discrete distributions (Binomial, Poisson and Geometric) and continuous (Uniform, Exponential and Normal)

R7   Know and apply the basic tools of statistical inference (confidence intervals and hypothesis contrast) using the tables of the Normal, Chi-2, t, and F distributions.

R8   Correctly interpret literature results based on confidence intervals and hypothesis contrasts

R9   Know how to use and apply the tools of Descriptive Statistics (Tables, Charts and Statistics)

R10   Knowing how to use and develop a descriptive study of a statistical variable

R11   Knowing how to use and apply the linear relationship between two numeric variables

R12   Knowing how to use and apply probability theory and is able to apply them to solve simple problems

R13   Know how to use and apply statistical concepts applied to diagnostic tests (specificity, sensitivity, predictive value, ...)

R14   Knowing how to use and apply the basics of random variable and probability distribution, knows the main discrete distributions (Binomial and Poisson) and continuous (Uniform and Normal)

R15   Know how to use and apply the basic tools of statistical inference (confidence intervals and hypothesis contrast) using the tables of the Normal, Chi-2, t and F distributions.

R16   Knowing how to use and apply confidence intervals and hypothesis contrasts

Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB1	Students have demonstrated to possess and understand knowledge in a study area that starts from the base of the general secondary education, and is usually found at a level that, while supported by advanced textbooks, also includes some aspects that involve knowledge from the forefront of their field of study				x
CB2	Students know how to apply their knowledge to their job or vocation in a professional way and possess the competences that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of ??study				x
CB3	Students have the ability to collect and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical topics				x
CB4	Students can pass on information, ideas, problems and solutions to both a specialized and non-specialized audience				x
CB5	Students have developed the learning skills needed to undertake further studies with a high degree of autonomy				x

GENERAL		Weighting			
		1	2	3	4
CG28	Obtaining and using epidemiological data and assess trends and risks for health decision-making				x
CG31	Knowing, critically valuing and knowing how to use the sources of clinical and biomedical information to obtain, organize, interpret and communicate scientific and health information				x
CG32	Knowing how to use information and communication technologies in clinical, therapeutic, preventive and research activities				x

CG33	Maintaining and using records with patient information for further analysis, preserving data confidentiality	**x**
CG34	Having, in professional activity, a critical, creative point of view, with constructive and research-oriented skepticism	**x**
CG35	Understanding the importance and limitations of scientific thinking in the study, prevention and management of diseases	**x**
CG36	Being able to formulate hypotheses, critically collect and evaluate information for problem solving, following the scientific method	**x**
CG37	Acquiring basic training for research activity	**x**

SPECIFIC		**Weighting**			
		1	**2**	**3**	**4**
CE20	Knowing the basics of biostatistics and its application to the medical sciences				**x**
CE21	Being able to design and perform simple statistical studies using computer programs and interpret the results. Understanding and interpreting statistical data in the medical literature				**x**

TRANSVERSAL		**Weighting**			
		1	**2**	**3**	**4**
CT1	Analytical and synthesis capacity				**x**
CT2	Planification and organization capacity		**x**		
CT5	Informatics knowledge			**x**	
CT6	Manage information capacity			**x**	
CT7	Solving problems				**x**
CT14	Critical reasoning				**x**
CT16	Individual learning				**x**

Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	30,00%	Open questions
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	70,00%	Tests
	0,00%	Participation in class

Observations

MENTION OF DISTINCTION:

According to Article 22 of the Regulations governing the Evaluation and Qualification of UCV Courses, the mention of "Distinction of Honor" may be awarded by the professor responsible for the course to students who have obtained, at least, the qualification of 9 over 10 ("Sobresaliente"). The number of "Distinction of Honor" mentions that may be awarded may not exceed five percent of the number of students included in the same official record, unless this number is lower than 20, in which case only one "Distinction of Honor" may be awarded.

Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

M1   Masterclass

M2   Problems resolution and practical cases

M4   Content presentations by teacher

M5   Knowledges and skills explanation

M9   Knowledge acquirance through student interaction and activity

M11   Personalised attention by professor

M14   Online activity on e-learning

M15   Personal study

M17   Discussion and solving issues in group

IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theory class M1, M2, M4, M5, M9, M11	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	42,00	1,68
Seminar and group practices M2, M4, M5, M9, M11, M17	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	10,50	0,42
Practices in small groups M2, M4, M5, M9, M11, M17	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	4,50	0,18
Tutoring M2, M5, M9, M11	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	1,50	0,06
Evaluation M2	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	1,50	0,06
TOTAL		**60,00**	**2,40**

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
No attendance M2, M14, M15	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	90,00	3,60
TOTAL		**90,00**	**3,60**

Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
Unit I	·Introduction to Statistics Health Sciences ·Basic Concepts of Biostatistics - Variables ·One-dimensional descriptive statistics ·Two-dimensional descriptive statistics. Correlation. Simple linear regression
Unit II	·Introduction to the calculation of probabilities ·Applications of conditional probability: Diagnostic Tests and Clinical Trials ·Random variables, discrete and continuous probability distributions ·Discrete Probability Distributions: Binomial, Poisson, Geometric ·Continuous Probability Distributions: Uniform and Normal
Unit III	·Introduction to statistical inference ·Point estimate ·Hypothesis contrast ·Confidence Intervals

Temporary organization of learning:

Block of content	Number of sessions	Hours
Unit I	12,00	24,00
Unit II	10,00	20,00
Unit III	8,00	16,00

References

Miguel Ángel Martínez González, Almudena Sánchez Villegas, Estefanía Toledo Atucha, Javier Faulín Navarro. Bioestadística amigable 4ª edición. Elsevier.

Wayne W. Daniel. Bioestadística. Limusa Wiley

Germán Martín González. Estadística básica con R. Universidad Católica de Valencia

Addendum to the Course Guide of the Subject

Due to the exceptional situation caused by the health crisis of the COVID-19 and taking into account the security measures related to the development of the educational activity in the Higher Education Institution teaching area, the following changes have been made in the guide of the subject to ensure that Students achieve their learning outcomes of the Subject.

Situation 1: Teaching without limited capacity (when the number of enrolled students is lower than the allowed capacity in classroom, according to the security measures taken).

In this case, no changes are made in the guide of the subject.

Situation 2: Teaching with limited capacity (when the number of enrolled students is higher than the allowed capacity in classroom, according to the security measures taken).

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject will be made through a simultaneous teaching method combining onsite teaching in the classroom and synchronous online teaching. Students will be able to attend classes onsite or to attend them online through the telematic tools provided by the university (videoconferences). In any case, students who attend classes onsite and who attend them by videoconference will rotate periodically.

In the particular case of this subject, these videoconferences will be made through:

X	Microsoft Teams
	Kaltura

Situation 3: Confinement due to a new State of Alarm.

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject, as well as the group and personalized tutoring, will be done with the telematic tools provided by the University, through:

| X | Microsoft Teams |

| | Kaltura |

Explanation about the practical sessions:

a

2. System for Assessing the Acquisition of the competences and Assessment System

ONSITE WORK

Regarding the Assessment Tools:

| | The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus. |

| X | The following changes will be made to adapt the subject's assessment to the online teaching. |

Course guide		Adaptation	
Assessment tool	Allocated percentage	Description of the suggested changes	Platform to be used
Preguntas cortas	30	Se asigna un 0% a este apartado	Teams o UCV-Net
Preguntas tipo test	70	Se asigna un 100%	Teams o UCV-Net

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

Comments to the Assessment System:

El examen se hará de manera presencial, si es posible, en caso contrario se hará on-line, empleando la plataforma UCV-Net o Teams