

Academic Year/course: 2021/22

## 66852 - Qualitative tools applied to health

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 66852 - Qualitative tools applied to health

**Faculty / School:** 105 - Facultad de Veterinaria

**Degree:** 617 - Master's in Global Health: Integration of Environmental, Human and Animal Health

**ECTS:** 6.0

**Year:** 1

**Semester:** First semester

**Subject Type:** Compulsory

**Module:**

## 1. General information

### 1.1. Aims of the course

The course's goal is to train the student to handle a set of tools that, together with those obtained in the complementary course of "Quantitative Epidemiology and Advanced Statistics", will provide the necessary training to be able to design study and research protocols, analyse and collect information, perform statistical and epidemiological analysis and present the obtained results.

### 1.2. Context and importance of this course in the degree

This course is part of the group of compulsory subjects and is included in a block of two subjects together with "Quantitative Epidemiology and Advanced Statistics". Within the Master's programme, it is located immediately after the initial compulsory subject "One Health: Origin, Evolution and Future". The competencies acquired in this course will serve as a basis and can be used in all the optional courses that are programmed below

### 1.3. Recommendations to take this course

There are not any specific requirements to take this course.

## 2. Learning goals

### 2.1. Competences

#### 2.1.1. Basic and general competences

On successful completion of this course, students will be able to:

- Understand and apply computer tools and Information and Communication Technologies to analyse and gather information in the Health field.
- Know and apply a diversity of the main qualitative and quantitative research tools in social sciences focused on the field of global health and wellbeing.
- Interpret, analyse and evaluate theories and results of research work in the field of global health and wellbeing.
- Design, develop and lead projects in the field of global health and wellbeing.
- Possess and understand knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context.
- Apply the knowledge acquired and their problem-solving skills in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.
- Integrate knowledge and deal with the complexity of making judgements based on incomplete or limited information, including reflections on the social and ethical responsibilities linked to the application of their knowledge and judgements.
- Communicate their findings and the ultimate knowledge and reasons behind them to specialist and non-specialist

audiences in a clear and unambiguous manner.

- Possess the learning skills that will enable them to continue studying in a largely self-directed or autonomous manner.

### 2.1.2. Transverse competences

- Identify, analyse and solve problems with scientific criteria and make decisions with initiative, creativity and critical reasoning.
- Acquire the knowledge and skills necessary for the development of work and research in an autonomous way
- Ability to work in a multidisciplinary group

### 2.1.3. Specific competences

- Ability to handle and manage databases and their analysis from a qualitative perspective.
- Understand the basis of quantitative and qualitative research applied to health and wellbeing.
- Understand the importance of ethnographic action and community mobilization and participation.
- Ability to develop analytical categories for the codification and analysis of qualitative data in research applied to health and wellbeing.
- Will use computer tools for qualitative and graphic analysis in research applied to health.
- Know the fundamental principles of the use of big data and machine learning in research applied to health.
- Know how to design experimental studies.
- Understand the ethical principles in the design of studies with human and animal populations

## 2.2. Learning goals

If students complete the course successfully, they should be able to:

- Ability to design and manage databases.
- Knowledge of the bases of quantitative and qualitative research applied to global health and wellbeing.
- Ability to propose coding strategies and qualitative analysis.
- Ability to write a qualitative research report ("research brief")
- Ability to handle computer tools for qualitative and graphic analysis.
- Know the fundamental principles of the use of big data and machine learning in research applied to health.
- ability to design experimental studies.
- Know the ethical principles in the design of studies with human and animal populations.

## 2.3. Importance of learning goals

The course contributes to the training of professionals in the one health field, as it provides various fundamental tools for their professional activity, including the design and management of databases, quantitative and qualitative analysis, the use of computer tools for qualitative and graphic analysis, and experimental design. This training is framed within the multidisciplinary environment necessary for research and development of global health projects.

# 3. Assessment (1st and 2nd call)

## 3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

The student must demonstrate that achieved the intended learning outcomes through the following assessment activities:

1. Presentation of a database with at least three tables, two forms, and three queries.
2. A graphical analysis from a database, including at least 4 types of graphs.
3. Development of a prediction model from a database.
4. Design of a working protocol of animal experimentation.
5. Present the methodological design of a social research project with a multimethod approach applied to a specific field of global health and wellbeing.

The activities will be performed at the classroom and their results will be delivered through the ADD of the subject and it will be part of the student's portfolio.

The assessment of each activity is reflected in the following table:

Assessment system	%
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Presentation of a database	20 %
Performing in the classroom a graphical analysis with R	30 %
Design of a working protocol of animal experimentation	20%
Development of a prediction model	10 %
Present the methodological design of a social research project	20 %

#### Global assessment

Students who have not passed a minimum of 80% of the proposed activities must prove that they have acquired the practical skills corresponding to the teaching not received by means of a specific exam consisting of a written evaluation of the theoretical (40 % of the final grade) and practical contents similar to those performed during the course (60 % of the final grade) and will be part of the student's portfolio.

#### Grading system:

The assessment criteria of the activities will take into account the assimilation by the student of the contents taught, as well as the clarity in the presentation of the activities and the ability to work in groups.

According to the national regulation Law 1025/2003, 5th of September which lays down the European system of credits and marking system for the university degree.

0-4.9: FAIL.

5.0-6.9: PASS

7.0-8.9: GOOD (NT).

9.0-10: EXCELLENT (SB).

Students with a grade over 9.0 might be awarded with honours.

In application of Article 158 of the Statutes of the University of Zaragoza, the provisional exam grades will be publicly displayed for a minimum of 7 days, and students will be able to review their exams, indicating in due course the place, date and time foreseen for this purpose.

## 4. Methodology, learning tasks, syllabus and resources

### 4.1. Methodological overview

The course will be taught by professors from various departments and areas of knowledge (Animal Health, Genetics and Nursing) with the aim of offering a multidisciplinary approach.

The learning process that has been designed for this subject is based on a combination of the following methods:

- Theoretical lectures by teachers, with the help of audiovisual media, supported by the publication of summaries and complementary material in the ADD to encourage prior study and participation in class by students.
- Practice sessions in the computer classroom that include the handling of design programs and database management (Microsoft Access 2016) and programming languages for statistical and graphic analysis (R)
- Presentation of case studies, so that the student can visualize specific examples of the design of experimental protocols.
- Problem solving and case studies, with the aim of students acquiring practical skills.

### 4.2. Learning tasks

Learning activities include the teaching of theoretical lectures by professors from the University of Zaragoza. Students will also have to solve problems and practical cases (in the classroom and computer room). Finally, the student's autonomous work is required, for the understanding of the theoretical and practical knowledge acquired. The distribution of hours of these activities is described in the following table.

Activity	Hours	% Face to face
Lecture (Theoretical- practice)	60	100
Student's autonomous work	90	0

### 4.3. Syllabus

The course will address the following topics:

#### Theoretical and practical content:

## **Module 1. Health information.**

Health information: strategies for use: the epidemiological survey and health databases

## **Module 2. Database design and management.**

- 2.1. Introduction to relational databases
- 2.2. Data tables: variable types, variable definition, data validation and table indexing
- 2.3. Introduction to the SQL language: Designing Basic Selection Queries
- 2.4. Forms design
- 2.5. Advanced SQL queries

## **Module 3. Introduction to the programming language R.**

- 3.1. Types of variables. Data structures: vectors, matrices, data-frames and lists
- 3.2. Reading and writing of data files
- 3.3. Data manipulation. Transformations between data structures Vector and matrix operations
- 3.4. Installing and running of external packages
- 3.5. Graphical analysis: Graphical parameters. One-, two- and multi-dimensional charts. Graphics presentation design
- 3.6. Introduction to programming: Programming concept, conditional structures and explicit and implicit loops

## **Module 4. Working protocols in animal experimentation.**

- 4.1. Design of working protocols in animal experimentation: Categorization according to different criteria, Deductive and inductive reasoning, Bases of statistical inference, Sample selection, Sampling biases
- 4.2. Design of experiments. Methodological basis of the calculus of the experimental size. Type of errors. Power of the test. Calculation of the experimental size to estimate differences in means and proportions
- 4.3. Analysis of working protocols in animal experimentation: Types of variables according to measurement scales, Association between two qualitative variables, Association between a qualitative variable and a quantitative variable

## **Module 5. Big data and machine learning.**

- 5.1. Big data analysis: Characteristics of the data
- 5.2. Machine learning: Prediction, Classification and Grouping. Training, evaluation and validation populations. Bias and Variance
- 5.3. Handling of R-packages for machine learning. Hands-on analysis

## **Module 6. Social research applied to the field of global health and wellbeing.**

- 6.1 Introduction to social research in the field of global health and wellbeing. Longitudinal and cross-sectional studies
- 6.2. Qualitative research. Theory and practice
  - 6.2.1. Observant participation and field diary
  - 6.2.2. Qualitative interviews and focus groups
  - 6.2.3. Participatory Action Research (PAR)
  - 6.2.4. Text and discourse analysis. Disclosure quality assurance tools (COREQ)
- 6.3. Quantitative research. Theory and practice
  - 6.3.1. Surveys and experimental research
  - 6.3.2. Systematic literature review and meta-analysis. Disclosure quality assurance tools (PRISMA)
  - 6.3.3. Delphi methodology
  - 6.3.4. Internet and social networks
  - 6.3.5. Behavioural experiments and role games
- 6.4. Multimethod approach. Introduction to computational modelling
- 6.5. ?Research Brief? writing practice

## **4.4. Course planning and calendar**

The calendar of the master and the programming of the theoretical and practical sessions of the subject will appear throughout the month of September in the web of the Faculty of Veterinary Medicine, in the following address: <http://veterinaria.unizar.es/>. This link will be updated at the beginning of each academic year.

### **Coordinator:**

Luis Varona Aguado E-mail: [lvarona@unizar.es](mailto:lvarona@unizar.es)

### **Tutorials:**

Tutorial schedules will be set on the start day of the course in each academic year

## **4.5. Bibliography and recommended resources**

The ADD will show the list of updated bibliography and recommended resources, and as far as possible, they will be

available before the theoretical and practical sessions, so that the student can consult them beforehand and thus favour the understanding of them and a more active participation.