# CEU
Universidad San Pablo

## COURSE DESCRIPTION

**COURSE: STATISTICS I**

**YEAR: 1   SEMESTER: 1**

**DEGREE: BUSINESS ADMINISTRATION AND MANAGEMENT**

**MODALITY: IN-CLASS TEACHING**

**ACADEMIC YEAR 2021/2022**

**FACULTY OF BUSINESS AND ECONOMICS**

# 1. COURSE/SUBJECT IDENTIFICATION

**1.- COURSE/SUBJECT:**

| | |
|---|---|
| Name: Statistics I | |
| Code: 18289 | |
| Year (s) course is taught:  1st | Semester (s) when the course is taught: 1st |
| Type: Compulsory | ECTS of the course: 3 / Hours ECTS: 30 |
| Language: Spanish and English | Modality: on campus |
| Degree (s) in which the course is taught:  Business Administration and Management | |
| School which the course is taught: Faculty of Business and Economics | |

**2.- ORGANIZATION OF THE COURSE:**

| |
|---|
| Department: Applied Mathematics and Statistics |
| Area of knowledge: Statistics and Operational Research |

# 2. LECTURERS OF THE COURSE/SUBJECT

**1.-LECTURERES:**

| Responsible of the course | CONTACT DETAILS |
|---|---|
| Name: | Aguirre Arrabal, Cristina |
| Phone number (extension): | 914566300   Extension: 15361 |
| Email: | aguiarr@ceu.es |
| Office: | JRB 0.05 |

| Coordinator of the course | CONTACT DETAILS |
|---|---|
| Name: | Inchausti Tabuenca, Elena |
| Phone number (extension): | 914566300   Extension: 15559 |
| Email: | inctab@ceu.es |
| Office: | JRB 0.05 |

| Lecturer | CONTACT DETAILS |
|---|---|
| Name: | Arribas Gimeno, Edgar |
| Phone number (extension): | 914566300   Extension: - |
| Email: | edgar.arribasgimeno@ceu.es |
| Office: | JRB 0.0- |

| Lecturer | CONTACT DETAILS |
|---|---|
| Name: | Atanes Torres, Roberto |

| Phone number (extension): | Tfno.: 914566300 |
|---|---|
| Email: | roberto.atanestorres1@ceu.es |
| Office: | 004B |

| **Lecturer** | CONTACT DETAILS |
|---|---|
| Name: | Gutiérrez Álvarez, Enrique |
| Phone number (extension): | Tlfno.: 914566300    Ext.: - |
| Email: | enrique.gutierrezalvarez@ceu.es |
| Office: | JRB 0.04 |

| **Lecturer** | CONTACT DETAILS |
|---|---|
| Name: | Herrera de la Cruz, Jorge |
| Phone number (extension): | 914566300    Extension: 15365 |
| Email: | jorge.herrera1@ceu.es |
| Office: | JRB 0.04 |

| **Lecturer** | CONTACT DETAILS |
|---|---|
| Nombre: | Marroquín Alonso, Irene |
| Tlfno (ext): | irene.marroquinalonso@ceu.es |
| Email: | Tfno.: 914566300   Ext.: 15 |
| Despacho: | JRB 0.05 |

| **Lecturer** | CONTACT DETAILS |
|---|---|
| Name: | Martínez Ávila, José Carlos |
| Phone number (extension): | Tlfno.: 914566300    Ext.: - |
| Email: | jose.martinezavila@ceu.es |
| Office: | JRB 0.03 |

| **Lecturer** | CONTACT DETAILS |
|---|---|
| Name: | Mondéjar Ruiz, Diego |
| Phone number (extension): | 914566300 Extension: 15393 |
| Email: | diego.mondejarruiz@ceu.es |
| Office: | JRB 0.08 |

| **Lecturer** | CONTACT DETAILS |
|---|---|
| Name: | Muñoz Céspedes, Ester |
| Phone number (extension): | 914566300 Extension: - |
| Email: | ester.munozcespedes@ceu.es |
| Office: | JRB 0.05 |

| Lecturer | CONTACT DETAILS |
|---|---|
| Name: | Nieto García, María Elena |
| Phone number (extension): | 914566300    Extension: 15659 |
| Email: | mariaelena.nietogarcia@ceu.es |
| Office: | JRB 0.08 |

| Lecturer | CONTACT DETAILS |
|---|---|
| Name: | Peral Walias, Irene |
| Phone number (extension): | 914566300    Extension: 15359 |
| Email: | irene.peralwalias@colaborador.ceu.es |
| Office: | JRB 0.04 |

| Lecturer | CONTACT DETAILS |
|---|---|
| Name: | Raboso Paniagua, Dulcinea |
| Phone number (extension): | Tlfno.: 914566300    Ext.: 15360 |
| Email: | dulcinea.rabosopaniagua@ceu.es |
| Office: | JRB 0.08 |

**2.- TUTORIALS:**

For any query regarding the course, students may contact instructors by e-mail, phone or visiting their office during the teacher's tutorial timetable published on the student's Virtual Campus.

# 3. COURSE DESCRIPTION

This subject includes the application and development of descriptive data analysis by using statistical software. The concepts and tools of statistical analysis are explained, for both quantitative and qualitative variables. The computer tool provides statistical results for interpretation and decision-making in business and economic activities.

# 4. COMPETENCIES

**1.- COMPETENCIES**

| Code | Basic and General Competencies |
|---|---|
| CB1 | Students have shown to have and understand knowledge in an area of study that draws from the basis of general secondary education, and is usually found at a level that, although it rests on advanced textbooks, also includes certain aspects that imply knowledge obtained at the forefront of their field of study. |
| CB2 | Students apply their knowledge acquired to their jobs in a professional manner and they have the skills observed by means of building and defending arguments and resolution of problems in their area of interest. |
| CG01 | Apply analytical and critical thinking, and its oral and/or written communication |

| Code | Specific Competencies |
|------|------------------------|
| CE9 | Understand and apply basic statistical measures for the descriptive analysis of economic and business variables. |

## 2.- LEARNING OUTCOMES:

| Learning outcomes |
|-------------------|
| By the end of this course, students will be able to:<br>• Make a descriptive analysis of economic quantitative variables.<br>• Understand and apply basic concepts of statistical analysis with economic and business data.<br>• Interpret the results of statistical analysis in the field of economics.<br>• Formulate and interpret economic indicators as a comparative measurement in the economic and business analysis. |

# 5. LEARNING ACTIVITIES

## 1.- DISTRIBUTION OF STUDENTS` ASSIGNMENT:

| Total hours of the course | 90 |
|---------------------------|-----|

| Code | Name | On-campus hours |
|------|------|-----------------|
| AF2 | Seminar | 30 |
| AF5 | Evaluation tests | 4 |
| TOTAL Classroom Hours | | 34 |

| Code | Name | Not on-campus hours |
|------|------|---------------------|
| AF0 | Independent study | 56 |

## 2.- DESCRIPTION OF LEARNING ACTIVITIES:

| Activity | Definition |
|----------|------------|
| AF2 Seminar | A training activity that, under the guidance of the professor, focuses on individually or jointly completing exercises, resolving problems or practical cases, to demonstrate understanding of the theory studied. |
| AF5 Evaluation tests | A training activity for evaluating the knowledge acquisition and/or the achievement of student's skills. |
| AF0 Independent study | A training activity in which the student independently manages what they have learned through the study of training materials or activities initiated by professors |

# 6. ASSESMENT OF LEARNING

## 1.- CLASS ATTENDANCE:

To qualify for the continuous assessment, it is required to attend at least 75% of classes (attendance will be checked in class every day and this control will be periodically uploaded to the virtual campus). Since students may miss 25% of the classes without affecting their attendance requirement, certificates for missed classes will not be accepted.

## 2.- ASSESMENT SYSTEM AND CRITERIA:

| ASSESMENT SYSTEM AND CRITERIA | | |
|---|---|---|
| Code | Name | Percentage |
| SE4 | Written tests 10-90 | 55% |
| SE6 | Practical tests 10-50 | 45% |
| Final mark of the course | | 100% |

## 3.- DESCRIPTION OF ASSESSMENT CRITERIA:

**ORDINARY CALL** (Continuous Assessment)

The student's assessment shall be carried out taking into account the following criteria:
- Test with reasoning questions, and different exercises to assess the knowledge acquired and imparted on the Descriptive Statistics section. (20%).
- Cross-curricular projects to verify the theoretical and practical knowledge imparted on the topics of the course (30%).
- Individual work based on readings about economic reports and presentations of these reports. (15%)
- Final test: The written final exam is mandatory and there will be multiple-choice questions, reasoning questions, and different exercises to assess the knowledge acquired in the semester (35%).

Attendance as such is not evaluated, however a minimum attendance of a 75% is required and it is necessary to have a minimum grade of 4 out of 10 in the final ordinary exam, in order to benefit from the continuous assessment. It is also necessary to have a minimum grade of 5 out of 10 in the individual or group work to enjoy the continuous assessment.

**EXTRAORDINARY CALL**

The student who did not pass the subject in the ordinary examination, will be evaluated in the extraordinary examination, consisting on two parts:
- First part: Final written exam with multiple-choice questions, reasoning questions, and different exercises to assess the knowledge acquired (55%).
- Test about report readings (15%)
- Second part: Delivery of projects done by using data from different statistical databases and applying the knowledge acquired during the course. (30%)

* If the student passed the projects and the readings about reports (grade above 5) in the ordinary examination, that grade is kept for the extraordinary examination. If the student had not a grade above 5, he must repeat the mentioned activities. It is also possible to repeat these activities for those students who want to improve their grades (grade above 5 in the ordinary examination).

# 7. COURSE PROGRAMME

**1.- COURSE PROGRAMME:**

**THEORY PROGRAMME:**

*Unit 1. EXPERIMENTAL DESIGN. BASIC CONCEPTS*
  *Frequency tables*
  *Statistical measurements*

*Unit 2. DESCRIPTIVE STATISTICS, BIVARIATE DISTRIBUTIONS AND LINEAR REGRESSION*

  **2.1 Joint, marginal and conditional frequencies**
  - *Frequency and correlation tables*
  - *Graphical representations*
  - *Independence between statistical variables*

  **2.2 Joint, marginal and conditional frequencies**
  - *Correlation and regression: concept and types*
  - *Linear regression and least square fitting*
  - *Linear correlation: correlation coefficient and coefficient of determination*

*Unit 3. ATTRIBUTE STATISTICS*
  *Association between qualitative variables*
  *Rank correlation*
  *Contingency tables*

*Unit 4. DATA INTERPRETATION: Economic variables. Index numbers and Rates of Change*

  **4.1 Concept and types of index numbers**
  - *Properties of the index numbers*
  - *Change of base and deflactation*
  - *Participation and Repercussion*

  **4.2 Concept of Rate of Change**
  - *Types of Rates of Change*
  - *Equivalent rate of change and Average rate of Change*

  **4.3 Concept and components of a time series**

# 8. RECOMMENDED READING

**1.- ESSENTIAL BIBLIOGRAPHY:**

**CORDOBA BUENO, M., ZAMORA SAÍZ, A. (2018):**
  Fundaments of Statistical Inference. Ed. Dykinson.
**MARTÍN PLIEGO, F.J. (2007):**
  Introducción a la Estadística Económica y Empresarial. Ed. Paraninfo
**MARTÍN PLIEGO, F.J., RUIZ-MAYA, L. (2006):**
  Fundamentos de Probabilidad. Ed. Thomsom
**MARTÍN PLIEGO, F.J., MONTERO LORENZO, J.M., RUIZ-MAYA, L. (2006):**
Problemas de Probabilidad. Ed. Thomsom

## 2.- ADDITIONAL BIBLIOGRAPHY:

KELLER, G. (2014):
*Statistics for Management & Economics*. Cengage Learning.

CARLBERG, C. (2011):
*Análisis estadístico con Excel.* Anaya Multimedia.

CASTILLO, I. Y GUIJARRO, M. (2005):
*Estadística descriptiva y cálculo de probabilidades*. Ed. Pearson.

FERNÁNDEZ CUESTA, C.(1995):
*Curso de estadística descriptiva. Teoría y práctica*. Ed. Ariel.

HERNÁNDEZ, A. (2008):
*Curso elemental de Estadística Descriptiva*. Ed. Pirámide.

MONTIEL, A. (1998):
*Elementos básicos de Estadística Económica y Empresarial*. Ed. Prentice Hall.

PÉREZ LÓPEZ, C. (2004):
*Estadística Aplicada a través de Excel*. Ed. Pearson.

PÉREZ, C. (2008):
*Técnicas Estadísticas con SPSS 12. Aplicaciones al análisis de datos*. Ed. Pearson.
PÉREZ LÓPEZ, C.(2012):
*Estadística Aplicada: Conceptos y ejercicios a través de Excel.* Garceta, 2012.

SANZ, J.A. ET AL.(1996):
*Problemas de Estadística Descriptiva Empresarial*. Ed. Ariel Economía.

URIEL, E. Y MUÑIZ, M. (1988):
*Estadística Empresarial (Teoría y ejercicios).*Ed. Paraninfo.

URIEL, E. Y PEIRÓ, A. (1995):
*Introducción al análisis de series temporales*. Editorial Paraninfo.

VISAUTA, B (2002):
*Análisis Estadístico con SPSS para Windows*. Ed. McGraw Hill.

## 3.- WEB RESOURCES:

In English:

- Bloomberg: platform with financial information (real-time data, news or analytics).
- Compustat: Database with company data.
- Eurostat: http://epp.eurostat.ec.europa.eu
- Kaggle: https://www.kaggle.com/
- Quandl: https://www.quandl.com/
- The Data and Story Library: http://lib.stat.cmu.edu/DASL/
- The Machine Learning Repository: https://archive.ics.uci.edu/ml/index.php
- World Bank Databank: http://databank.worldbank.org/

In Spanish:

- Bank of Spain: https://www.bde.es/bde/es/
- Community of Madrid: http://www.madrid.org
- Madrid City Council: datos.madrid.es/
- SABI: Database with economic and financial information about spanish and portuguese companies.
- Spanish Government: datos.gob.es
- Spanish National Statistics Institute: http://www.ine.es
- Spanish National Stock Market Commission:
  http://www.cnmv.es/Portal/Publicaciones/SeriesWeb/Inicio.aspx

# 9. ATTITUDE IN THE CLASSROOM

**1.- REGULATIONS**

The student must show a proper classroom behaviour, accordingly to the Faculty and University regulations and rules. This means that the student must not only attend every class on time, but must maintain a participative attitude, doing the required assignments or activities.

Any irregular act of academic integrity (no reference to cited sources, plagiarism of work or inappropriate use of either electronic devices in class -smartphones, tablets, computers, etc.- or prohibited information during examinations) or signing the attendance sheet for fellow students not present in class will result in the student not being eligible for continuous assessment and possibly being penalized according to the University regulations.

Students should observe the following norms while in class:

- Sit properly.
- Switch off mobiles during class, exams, and other classroom activities.
- Maintain at all times a respectful attitude, both to the fellow students and to teachers and other staff of the University.
- Foods and drinks are not allowed in class.
- Do not read or handle material other than those of the subject being taught.
- Show respect to the University and its facilities.

Any attempt to copy in an exam, in whatever form, is considered a very serious offence, contrary to the spirit of the University. As per the rules of behaviour for students (approved by the University Council on December 17th, 1997), any such attempt will result on the opening of a case to study the situation, and it could result on the temporary or permanent expulsion of the student from the University.

## 10. EXCEPTIONAL MEASURES

Should an exceptional situation occur which prevents continuing with face-to-face teaching under the conditions previously established to this end, the University will take appropriate decisions and adopt the necessary measures to guarantee the acquisition of skills and attainment of learning outcomes as established in this Course Unit Guide. This will be done in accordance with the teaching coordination mechanisms included in the Internal Quality Assurance System of each degree.