INFORMATICS (ML2207)

1. LANGUAGE

English.

2. COURSE CONTENTS

Coordinator: Prof. CECCARELLI RICCARDO

Academic Year: 2022/2023

Year Course: 2

Semester: 1

UFC: 2

Modules and lecturers:
- INFORMATICS 1 (ML000207) - 1 cfu - ssd INF/01
Prof. Riccardo Ceccarelli
- INFORMATICS 2 (ML000208) - 1 cfu - ssd INF/01
Prof. Riccardo Ceccarelli, Riccardo Ceccarelli

3. BIBLIOGRAPHY

Microsoft Excel training materials can easily be found on the web in the students' native language.

The material course will be distributed during the lessons/laboratories or shared through Blackboard platform.

4. LEARNING OBJECTIVES

The aim of the course is to offer advanced preparation for the use of the spreadsheet features. The student will be accompanied by the professor in the solution of many case studies, many of which taking from healthcare world. The learner will be asked to "jump" from time to time a progressively higher bar, but always "placed" within his reach. The student will learn to call the various Excel functions with the correct name acquiring their purpose and syntax (arguments and expected result), and to apply the most appropriate function to solve a problem.

Successful candidates will be able to:

• Work with workbook. Enter data into cells and use good practice in creating lists and tables. Use subtotals. Select, sort and copy, move and delete data.

• Operate with relative, absolute and mixed references to Excel cells.

• Create mathematical and logical formulas using standard excel functions such as logical functions, if function and its nested use, text functions, date & time functions, lookup functions, etc.

• Use good work practices in the creation of formulas using multiple standard function and in the recognition of errors in formulas.

• Use pivot tables for data analysis.

• Choose, create and format charts to communicate information clearly and meaningfully.

• Use descriptive statistics functions.

• Operate with inferential statistical tests and interpret inferential summaries.

5. PREREQUISITES

Basic knowledge of the Microsoft Windows Operating System. It is important to know how to organize and manage files and folders.

6. TEACHING METHODS

The course includes:

A. *Lectures in the classroom during which Excel features will be illustrated.*

B. *Exercises in the computer lab to apply what was explained during classroom presentations.*

If necessary, Lectures and exercises could be held via webinar using the Blackboard platform.

7. OTHER INFORMATIONS

None.

8. METHODS FOR VERIFYING LEARNING AND FOR EVALUATION

The final evaluation will be based on a practical test (assignment) that every student will have to perform on a computer. The practical test will be organized on five Excel exercises distributed on different spreadsheets. The professor will associate a weight, expressed in points, with each request or question entered in the exercises. The sum of all points of the five exercises will be the maximum score obtainable (31 equal to 30 cum laude). Therefore, the final score of a student will be equal to the sum of the points obtained for the requests / questions correctly completed.

9. PROGRAM

Working with Spreadsheets

Open, close a spreadsheet application. Open, close spreadsheets.

Create, Rename, Delete, Move and Copy, Rename a spreadsheet.

Save a worksheet to a location on a drive.

Save a worksheet as another file type.

Switch among open spreadsheets.

Enter a number, date, text in a cell. Manage cells.

Sort, Copy, Move, Delete data.

Manage Rows and Columns.

Insert, manage, and delete Tables and Cell Ranges.

How to use subtotals.

How to manage Error messages.

Advanced Conditional Formatting.

Advanced filters.

Other features: understanding regional differences in Excel; how to use fractions; how to add line breaks. …

Formulas and Functions

Create mathematical and logical formulas using cell references (relatives, absolutes) and arithmetic operators.

FUNCTIONS divided among: LOGICAL Functions: and(.), or(.), false(.) if(.) etc.; AUTOSUM Functions: sum(.), count(), counta(), sumif(.), sumifs(.), etc.; TEXT Functions: text(.), replace(.), search(.), mid(.), find(.), len(.), left(.), right(.), Cocatenate(.), upper(.), lower(.), proper(.), etc.; DATE & TIME Functions: today(), date(.), datevalue(.), day(.), days(.), networkdays(.), networkdays.intl, now(), yearfrac(), datedif(.), time(), second(.), timevalue(.), etc.; LOOKUP & REFERENCE Functions: vlookup(.), match(.), index(.); STATISTICAL Functions: percentile.exc(.); percentile.inc(.); average(.),: var.p(.), var.s(.), stdev.p(.), stdev.s(.), t.test(.), chisq.test(.), etc.

Charts

Create different types of charts (specific for qualitative and quantitative variables).

Add data labels to a chart. Change settings.

Pivot Table

Create Pivot Table for data analysis (specific for qualitative and quantitative variables).

Pivot Charts.

Basic statistical summaries and inferential tests (via spreadsheet)

Calculate measures of central tendency and variability.

Two way to make inference:

- Estimation of parameters (Point Estimation; Interval Estimations)

- Hypothesis Testing (Null & Alternative Hypotheses), Level of Significance, p Value Test.

Tests: T-Test with paired or unpaired two sample, CHI-SQUARE Test.