Software Packages
Seminar requirements
ECSI Faculty, IIIrd year

The seminar activity will be finalized with a project.

The **project** will use MS Excel, Python and SAS program packages in order to analyze the activity and the expansion possibilities of an organization.

The project will be made individually or in groups of 2 students for the same organization.

For each program package **it is mandatory** to use at least the following functionalities:

Excel: 4 of the following capabilities (combined or used separately): LOOKUP functions, financial functions, logical functions, statistical functions, user-defined functions, macros, Pivot Table, Goalseek, Scenario, Solver, Subtotals, Charts.

SAS Enterprise Guide:
- importing a non-SAS file
- queries
- joins
- using prompts
- a report
- a chart
- a statistical processing
- user defined formats
- creating a composed document
- using different styles

SAS programming: combined or used separately, use minimum 6 of the following facilities: creating a SAS data set from external files, creating and using user-defined formats, iterative and conditional processing of data, creating data subsets, using SAS functions, combining data sets with specific SAS and SQL procedures, using arrays, using report procedures, using statistical procedures, generating graphs.

Python programming, combined or used separately, use minimum 6 of the following facilities:
- using lists and dictionaries, including their specific methods;
- using sets and tuples, including their specific methods;
- defining and calling some functions;
- using conditional structures;
- using repetitive structures;
- importing a *csv* or *json* file into the *pandas* package;

- accessing data with *loc* and *iloc;*
- modifying data in the *pandas* package;
- using group functions;
- dealing with missing values;
- deleting columns and records;
- statistical processing, grouping and aggregation of data in the *pandas* package;
- processing of data sets with *merge / join*;
- graphical representation of the data with the *matplotlib* package;
- using *scikit-learn* package (clustering, logistic regression);
- using *statmodels* package (multiple regression).

The project will be written in MS Word, will be organized on software packages and functions, and for each function you will specify:
a) Defining the problem
b) Information required for solving
c) Calculation methods, algorithms, calculation formulas used (as appropriate)
d) Presentation of results (screen shot)
e) Economic interpretation of results
The project will be electronically and will contain the Word document, the Excel file, in which the Excel exercises were solved, and the specific files for working in SAS and Python.

The project will be archived and uploaded on online.ase.ro in **2 parts** (1 - Excel and Python, 2 – SAS programming and SAS EG). Also, all the files belonging to a project will be included in a folder that has the complete name of the author(s) and their group.

The project team must be announced in the **second seminar** (here: https://docs.google.com/spreadsheets/d/11VbiceayuVIJDbbY6zORW7m1dD9gtKPh8EPdwbuOUeU/edit?usp=sharing) and cannot be changed.

The organization that was chosen for exemplifying the exercises cannot be changed during developing the project.

Identical projects will have 0 points, even if at a previous evaluation they received another scoring.

The projects are uploaded when the seminar teacher specifies for each group.

The quiz exam - 50.00 % of the final grade

The project is 30.00 % of the final grade

The ability to use software packages – practical exam - 20.00 % of the final grade

Theoretical elements – minimum 5 out of 10

The ability to use software packages – mandatory condition for passing the exam

Project – minimum 5 out of 10; condition for accepting the project: using all software packages presented at the seminar

Note: in the summer exam session, the students that didn't get at least 5 at the seminar, must present the project and/or take the seminar test in the exam day.