

Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
INF356	Introduction to Data Analysis	5	3	0	0	3	4

Prerequisites	IND211 VEYA INF211
Admission Requirements	IND211 VEYA INF211

Language of Instruction	French
Course Type	Compulsory
Course Level	Bachelor Degree
Objective	This course aims that the students who already have basic knowledge about statistics might combine different statistical concepts, make statistical inference from data, develop models for their data and easily create the codes that implements their models when they come across real-world engineering problems. Hence, those students can approach at first sight theoretically, then develop theoretical solutions and finally create practical structures to the engineering problems related to data.
Content	<ol style="list-style-type: none">1. Week Data-Information-Knowledge, General View to Data Analysis2. Week Basic Statistical Concepts, variable types, Data description, Introduction to R3. Week Numerical Data Description - Application in R and R visualization functions4. Week Parametric Statistic, Statistical Inference, creating toy data in R and inference from it5. Week Comparing two samples, t-test, Interpreting the results, R application6. Week Analysis of variance, AOV and ANOVA in R7. Week Linear and Multiple regression, lm function in R8. Week Midterm9. Week Covariance analysis, R application10. Week Variations of Linear Regression: Logic Regression, General Linear Model, Hierarchical linear Model11. Week Time Series Analysis, Declaration of Term Project12. Week Non-parametric Statistic, Significance test13. Week Non-parametric Statistic, Measures of Association14. Week Advanced non-parametric methods and project presentations
References	<ol style="list-style-type: none">1. PDQ Statistics, Geoffrey R. Norman, David L. Streiner, 20032. The Art of R Programming, A tour of Statistical Software Design, Norman Matloff, 20113. Data Mining Concepts and Techniques, Jiawei Han, Micheline Kamber, 20064. An Introduction to Statistical Learning, Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, 20135. Software for Data Analysis: Programming with R (Statistics and Computing), John M. Chambers, 20086. Modern Applied Statistics with S (Statistics and Computing), W.N. Venables, B.D. Ripley, 2002

Theory Topics

Week	Weekly Contents
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