
COURSE NAME	Review Course in Maths and Statistics: <i>Probability & Statistics</i>
PROFESSOR	Prof. Christian Brownlees Practicals: André Souza
PROGRAM	<i>Brush-up Courses 2019-2020 - Master Program in Economics and Master Program in Finance</i>
COURSE OUTLINE	<p>Part 1: Introduction to probability</p> <ul style="list-style-type: none">a. Probability and counting rulesb. Conditional probability, independencec. Bayes theoremd. Probability distributions <p>Part 2: Random variables</p> <ul style="list-style-type: none">a. Discrete random variablesb. Cumulative distribution functionc. Expectation of a random variable, varianced. Sums and averages of i.i.d random variablese. Discrete modelsf. Continuous random variables, probability densityg. Continuous models: gaussian, chi-squared, t and F χ^2 distributionsh. Moments of a random variable, moment generating functioni. Central limit theoremj. Other continuous models <p>Part 3: Basics of inference</p> <ul style="list-style-type: none">a. Sampling distributionsb. Point estimationc. Confidence intervalsd. Non parametric testse. Hypothesis testingf. Power of a test <p>Part 4: Joint distributions</p> <ul style="list-style-type: none">a. Joint, marginal and conditional distributionsb. Conditional moments, iterated expectationc. Covariance and correlationd. The continuous casee. The multivariate normalf. Linear combinations of normals <p>Part 5: Inference revisited</p> <ul style="list-style-type: none">a. Simple regression model, analysis of varianceb. Properties of estimatorsc. Maximum likelihood estimation
REFERENCES	<i>Mathematical Statistics and Data Analysis</i> by John Rice, ISBN 978-0534399429
