

**Scuola di Dottorato del Politecnico di Bari**

**Ph.D. School**

**Research Methodologies**

**CFU 2 (16 hours)**

**SSD: ING-IND/31**

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| **Goal** | This course aims at providing PhD students with a knowledge of Research Methodologies and how to use them effectively in their scientific research |
| **Program** | 1. Research theory:  The epistemology of Research. Methodological emergencies. Knowledge and scientific research. Search Type. Ethics and Research  2. Research Tools :  Statistics for research. Choice of statistical tests. Data analysis. Reading and analysis of results. Research report, Elements of research evaluation.  3. Research Methodology:  Coding and Data Analysis. Mathematical model: i. Experimental Verification and Validation; ii. Limits and Perspectives of the Model; iii. Definition of the Investigation Object. Processing Systems of Experimental Data. Data processing (from Database to post-processing) . Modeling and main existing software  Black-Box models - Two/Three--dimensional models. Theoretical equilibrium models and theoretical dynamic ones. Experimental models.Research Networks in the field of Theoretical/Applied Sciences  4. Research Project  Ideation. Drafting. Design. Conduction and Management. Verification and Audit. Drafting of a scientific article.  5. Case studies and examples |