



## **ACADEMIC YEAR 2014 – 2015**

### **TITLE OF DIPLOMA THESIS:**

Risk management and goal programming in designing and implementation of technical projects. The case study of upgrading a ring road.

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### **ABSTRACT**

The object of this thesis is the analysis of risk management in construction projects by means of combined use of software Primavera Risk Analysis (Pertmaster) and Goal Programming. The need to anticipate situations that affect the technical projects stems from the actual impact caused to them. And this need has always existed. However, with increasing complexity of the works, the greater the volume of work therefore increases and the time required to implement. Time, however, is also one of the major factors that determine the uncertainty. The result of the above was to become risk management in science, in which companies invest considerable sums in order to limit the probability confronted with incalculable damage. In this master thesis, there is a presentation of the entire risk management process as a manual, from the conception till the delivery of a project. Afterward, a table drawn up with the most common hazards that occur during the execution of a project, guided by what is mentioned in the theoretical part and the relevant literature. To ensure the widespread of case study and protect the results of arbitrary generalizations, all of the specialized risks associated with the particular nature projects avoided. These risks are analyzed by the Pertmaster tools, since having been given qualitative and quantitative characteristics. The results are the new data for the Goal Programming. The risks are now the project influencing variables, grouped in categories. The main goal at this stage is the modeling of the data so that investment can be allocated in risk management to share in a way that ultimately yield the best possible result, a situation that is as close as possible to the ideal solution. However, many of the parameters of the problem are altered during the implementation of projects. So in a second phase of the model analysis the objectives and the goals are modified in order to solve the same problem. This ensures the prompt handling of issues arising in this dynamic environment.

### **KEYWORDS**

Risk, construction management, goal programming, optimal solution, Pertmaster