

Management Decision-Making Using Ontologies

ENCGE647		3 Credits
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COURSE DESCRIPTION

The concept of decision-making (DM) is central to all areas of management – accounting, finance, marketing, strategic management, information systems, etc. The classic model of decision making has three stages: Intelligence, Design, and Choice. Intelligence is the discovery and formulation of the problem about which the decision must be made. Design is the specification of alternatives to solve the problem. Choice is the selection of the solution to the problem. The efficiency, effectiveness, and ethics of a decision will depend upon how systematically the problem is formulated, alternatives specified, and choices made.

Management problems are complex. They are usually specified by managers in the natural language of their daily discourse – Spanish, English, Chinese, etc. It is difficult to formulate, analyse, and solve them systematically, without compromising their complexity. Simplifying the problems can make the solutions ineffective. An ontology can capture the combinatorial complexity of such a problem in a structured natural language, in a way that is understandable to the managers, analysts, and decision makers. An ontology can be used to systematically to (a) analyse the gaps between the desired and present states to formulate the problem, (b) specify all the possible alternative pathways to bridge the gaps, and (c) choose the optimal combination of alternatives to solve the problem.

I.- COURSE LEARNING OBJECTIVES

General Objective: How to formulate managerial problems systemically and make decisions systematically using ontologies.

1. How to formulate a problem as an ontology?	20%
2. How to conduct gap-analysis using the ontology?	20%
3. How to specify the alternatives using an ontology?	20%
4. How to choose the solution(s) using an ontology?	20%
5. How to assess the implementation through feedback and learning using an ontology?	20%

II.- CONTENTS

Topic	Content	Mandatory Reading	Activities
1	Introduction	Will be posted at Chile Visit 2025 Readings	Lecture Discussion Groups formation
2	Formulation of a managerial problem	Will be posted by June 1, 2025, at Chile Visit 2025 Readings	Lecture Interactive group exercise
3	Gap analysis	Will be posted by June 1, 2025, at Chile Visit 2025 Readings	Lecture Interactive group exercise
4	Design of alternatives	Will be posted by June 1, 2025, at Chile Visit 2025 Readings	Lecture Interactive group exercise
5	Analysis of alternatives	Will be posted by June 1, 2025, at Chile Visit 2025 Readings	Lecture Interactive group exercise
6	Choosing among alternatives	Will be posted by June 1, 2025, at Chile Visit 2025 Readings	Lecture Interactive group exercise
7	Formulation of solution	Will be posted by June 1, 2025, at Chile Visit 2025 Readings	Lecture Interactive group exercise
8	Feedback, learning, and assessment	Will be posted by June 1, 2025, at Chile Visit 2025 Readings	Lecture Interactive group exercise
9	Conclusion	Will be posted by June 1, 2025, at Chile Visit 2025 Readings	Lecture Discussion

III.- METHODOLOGY, EVALUATION AND BASIC REGULATIONS

3.1.- Methodology:

The course will discuss how managerial decisions can be made systematically using ontologies. It will discuss how ontologies can be used in all three stages of decision-making – Intelligence, Design, and Choice. It will describe how ontologies can be constructed and applied to simple problems such as deciding where to eat lunch, and complex problems such as deciding the strategy of an organization. It will provide practical examples of application in marketing, healthcare, information systems, strategic management, and policy making. The course will be interactive. There will be short group exercises on the construction and application of ontologies to managerial problems chosen by the students.

3.2.- Evaluation:

Each group must submit a project report based on the interactive exercise in the class. The report must be submitted one week after the conclusion of the class.

3.3.- Basic Regulation

1. Students must have at least 75% attendance in the course to pass it.

2. Classes will be on the days and times indicated by the program management.
3. For each class, students must have read and studied the corresponding bibliography in advance.
4. The grading of all evaluations will be done with a grade from 1 to 7.
5. The professor reserves the right to add, delete or replace bibliography during the course of the program if he/she deems it appropriate for the proper progress of the subject.
6. The unjustified absence of a student from a requirement will be graded 1.
7. It is important to emphasize that each student must assume his or her own responsibility in completing the program, especially in relation to:
 - a. Be up to date on the development of the subject and the various instructions given by both the teacher and the course coordination. For example, absence from a class session does not exempt you from the academic obligations established that day.
 - b. Ensure faithful compliance with the dates and deadlines established for the different evaluation activities. Once set and known, they will not be modified.
 - c. Obtain the support material indicated for the chair when applicable.
8. All works presented during the program will only have value to the extent that their author is able to explain and support them personally. Deliveries that contradict the above are not accepted. Any medical justification corresponding to non-attendance to a requirement must be presented through the regular channels established by the University.
9. Any form of copying and/or plagiarism is penalized and if this situation is identified, the respective [disciplinary procedure](#) will be followed.

IV.- BIBLIOGRAPHY

Will be posted at by June 1, 2025.

[Chile Visit 2025 Readings](#)

*Syllabus subject to changes