



UNIVERSIDAD DE CHILE
FACULTAD DE CIENCIAS FÍSICAS Y MATEMÁTICAS
DEPARTAMENTO DE INGENIERÍA INDUSTRIAL

IN730: “Principles of Decision Theory” **(5 UD)**

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CARACTER: Electivo Magíster en Gestión de Operaciones y Doctorado en Sistemas de Ingeniería, Gestión de Operaciones

REQUISITOS: IN34A/MA34B/Equivalente.

SEMESTRE: PRIMAVERA 2004.

HORARIO: 1.2 – 3.2 - 5.2

OBJECTIVE

“The purpose of the course is to convey an understanding of the formulation and analysis of decision problems, particularly under conditions of uncertainty and multiplicity of criteria. The material covered includes basic concepts of statistical decision theory, models for evaluating information, preference analysis, utility theory and subjective probability .

TOPICS (with recommended readings from the list in the bibliography)

1. Introduction R-0,1 KR-1 BRT-1 RA-0
2. The payoff table, uncertainty without probabilities R-1 LR-13 RA-3
3. Monetary expectation, value of information R-1,2,3 RA-3
4. Sequential decision making, folding decision trees R-5 R-2
5. Preference presentation, Certainty monetary value and the utility expectation rule R-4 K-5 BRT-4,5 LR-2
6. The "wealth" effect, the lottery market, risk measures R-4 K-6
7. Foundations of subjective probability BRT-4
8. Critical analysis of utility expectation KT-2 RA-5 LR-2 BRT-9
9. Multiattribute decision making HB KR KLS

BIBLIOGRAPHY

1. **BRT** Bell, D., H. Raiffa and A.Tversky (1988), *Decision Making Descriptive, Normative, and Prescriptive Interactions*. Cambridge University Press. S/658.403 DEC
2. **KR** Keeney, R.L. and H. Raiffa (1976), *Decisions with Multiple Objectives: Preferences and Value Tradeoffs*, Wiley. S /658.403018 KEE
3. **K** Kreps, D (1988), *Notes on the Theory of Choice*. Westview Press, S/339.4207 KRE
4. **LR** Luce, R.D. and H. Raiffa (1957), *Games and Decisions*, Wiley. S/519.3LUC
5. **R** Raiffa, H.(1968). *Decision Analysis*, Addison-Wesley. S /658.403 RAI
6. **RA** Rapoport, A. (1998), *Decision Theory and Decision Behaviour*, 2nd ed., Macmillan. S /658.403 RAP
7. **S** Savage L. J, (1972), *The Foundations of Statistics*, Dover. S /518 SAV

Journals

8. **HB** Henig, M.I. and J. Buchanan (1996), Solving MCDM Problems: Process Concepts, *Journal of Multi-Criteria Decision Analysis* 5, p. 3-12.
9. **KLS** Keeney, R.L, J. Lathrop and A. Sicherman "An Analysis of Baltimore Gas and Electric Company's Technology Choice", *Operations Research* Vol 34 (1), 1986, 18-39.
10. **KT** Kahneman, D. and A.Tversky (1982), The Psychology of Preferences, *Scientific American* 246 p. 160-73.