

SYLLABUS

I. IDENTIFICATION

Degree Course: Business Administration		
Department: Administração Empresarial – DAE		
Course: Operational Research		Code:
Working Hours: 72 hours/class	Academic year: 2024/1	Phase: Elective class
Professor: Julio da Silva Dias, Dr		
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II. SUMMARY

Decision concepts and management focus of operational research. Math programming and modeling: linear programming; quadratic programming. Math programming applied to management issues. Classical decision theory. Lines and simulation theory.

III. GOALS AND OBJECTIVES

Enable students to use quantitative methods as helpers to make decisions.

IV. DIDACTIC PROGRAM

1. **Program Presentation**
2. **Business Games**
3. **Decision Theory Concepts**
4. **Math Programming and System Modeling**
5. **Introduction to Operational Research**
 - a. Linear Programming
 - b. Nonlinear Programming
 - c. Quadratic Programming
 - d. Deterministic Dynamic Programming
6. **Introduction to Probabilistic Models**
 - a. Statistic Analysis of Decision
 - b. Risky Decisions
 - c. Decision Making Under Uncertainty
 - d. Criteria Analysis
 - e. Bayesian Analysis
7. **Decision-making among conflicts**
 - a. Game theory
8. **Lines Theory and Systems Simulation**

V. LEARNING METHODOLOGY

- Lectures and practice lessons to problem solutions (on classroom or lab)
 - The roll call will finish 10 minutes after the beginning of class
 - After the 7th absence without formal justification, the student name will be erased from the roll call
 - During the classes, any activity that is not related to the class is forbidden

- After finishing the activities related to the class, the student can go out of the classroom
- Complementary readings

IV. ASSESSMENT SYSTEM

The assessment of students will occur through the integration of:

- 3 Exams;
 - Exams contents are cumulative, therefore, all contents until the exam day can be on the exam
 - Makeup Exams
 - They occur in the end of the semester. The student has to require it with the secretariat and there are specific rules to require them.
 - Alternative to makeup exams
 - Any student that has 75% of frequency and has not required the makeup exam with the secretariat can do a 4th exam, with all subjects presented among the semester, to replace its lower grade or the grade of an exam that it missed.
- Lab Activities and others;
 - Can be used by the professor to round exams grades.
 - Can be used by the professor to non-attending activities to students with a higher average than 7.0

V. BIBLIOGRAPHY

BASIC BIBLIOGRAPHY

WINSTON, Wayne L. **Operations research: applications and algorithms**. 4th ed. United States: Thomson Learning, c2004. 1418 p.: ISBN 9780534380588 (enc.)

CIRIANI, Tito A; GLIOZZI, Stefano; JOHNSON, E. L; TADEI, Roberto. **Operational research in industry**. West Lafayette, Ind.: Ichor, 1999. 330 p. ISBN 1557531722 (broch.).

RARDIN, Ronald L. **Optimization in operations research**. New Jersey: Prentice-Hall, 2000. 919 p. : ISBN 0023984155 (enc.)

ACKOFF, Russell Lincoln; SASIENI, Maurice W. **Fundamentals of operations research**. 1 ed. New York, NY: J. Wiley, 1968. 455 p. :

RAGSDALE, CLIFF T. CENGAGE. **Modelagem e Análise de Decisão**. Ed. Cengage, 2009 (1^a Ed.)