

# Opening

Eduardo Camponogara

Department of Automation and Systems Engineering  
Federal University of Santa Catarina

October 2016

Introduction

Seminars

Presentations

# Summary

Introduction

Seminars

Presentations

# Course Goals

Develop fundamental knowledge on discrete optimization:

1. Problem formulation.
2. Problem classes and solution methods.
3. Integer programming.
4. Piecewise-linear approximation (unidimensional and multidimensional).

# Summary

Introduction

**Seminars**

Presentations

# Seminars

## October 10<sup>th</sup> (Monday)

- ▶ Fundamentals
- ▶ Introduction to modeling
- ▶ Modeling practice (AMPL)
  
- ▶ Review of linear programming
- ▶ Introduction to integer programming
- ▶ Practice (AMPL)

# Seminars

## October 11<sup>th</sup> (Tuesday)

- ▶ Relaxations and bounding
- ▶ Branch-and-bound algorithm
- ▶ B&B Practice
  
- ▶ Valid inequalities
- ▶ Cutting-plane algorithm
- ▶ Cutting-plane practice

# Seminars

## October 12<sup>th</sup> (Wednesday)

- ▶ Piecewise-linear approximation: onedimensional
- ▶ Branch-and-bound algorithm: multidimensional
- ▶ Practice
  
- ▶ Gas-lift allocation problem
- ▶ Introduction to MINLP
- ▶ Practice



# Summary

Introduction

Seminars

Presentations

# Group Presentations

October 14<sup>th</sup> (Friday)

- ▶ Session 1
- ▶ Session 2
- ▶ Session 3