Improving Quality in Intro IE through Case Studies and Communication

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Outline

- Background
- Outline of course
- Teams and communication
- Cases
- Evaluation
- Summary
Background

- Intro IE course
  - Soph level
  - 300-400/year
- Problems
  - Lack of depth in survey form
  - Perceived IE lack of rigor
  - Little comm/team instruction

Outline of Course

- Decision Making in Operations
  - Value concepts
  - Engineering economics
  - Role of operations
- Team/comm. development
- Cases
  - From practice
  - Massaged some data
Teams

- Single lecture
- Structure of teams
- Management
- Selection and task setting
- Dealing with difficulties

Report Writing

- Provide examples
- Impression of managers’ time
- Succinct delivery
- Clear expression
- Example of Harvard case report
Cases

- Origin
  - Practical examples from instructor’s experience
  - Coverage of operational issues
  - Crossing industries: mfg., entertainment, health care, public utility
- Goal: Teach a skill that goes beyond “common sense”

Example: Location

- Setting
  - Major manufacturer
  - Considering new location
  - Problems:
    - Leaving city location
    - Employee effects
    - Market returns?
- Decision: where to put HQ, Mfg., Test, Pre-prod., Finance?
**“Power Motors” Location**

- To Greenfield or not?

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Greenfield  Test  HQ  Mfg  Preprod.  Finance
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**Scheduling**

- Problem:
  - Find the most efficient schedule for the new soccer league’s western division
  - Play all teams home/away in two series
  - Max of two consec. road games
  - Limited time of season

- Minimize total distance (constrained tsp)
MLS Schedule

- Teams
  - San Jose
  - Denver
  - Kansas City
  - Los Angeles
  - Dallas

Scheduling Results

- Method
  - Column generation (as in airline sched.)
  - Use of opt. tours for each team

- Solution
  - Taught MSExcel Solver
  - Can find optimum in basic Excel
Evaluation

- Grading
  - Techniques
    - Eng Econ - Midterm 1
    - Dynamic Programming, LP - Midterm 2
    - Prob/Stats (health care staffing) - Midterm 3
  - Analysis
    - Case studies
    - Peer evaluations

Student Response/Observations

- Prefer cases and teams: 2 to 1
- Improved understanding after case
- Some concepts difficult - terms
- Computational skills key
- Alternatives: single case through term
  - Find how to make single product
  - Price and market
Summary

- Changed from survey format
- Included teams and cases
- Increased added value of class (not just common sense)
- Need for broader student involvement
- Now: break into separate 2 cred. classes