Core Managerial Statistics

A review by a sub-committee of the CBS Executive Committee

Nahum Melumad
Elke Weber

June 2005

Overview

• Unusual length and schedule for Core offering as result of last Core Curriculum reform
  – 22 sessions taught in 8 weeks within first half of first semester

• Well received by students
  – Consistently good ratings for course and instructors
    • At least for regular faculty
  – Demand for lengthening the course

• Faculty motivated to teach it

• Uniformity of topic coverage and teaching materials
  – With one exception (Juran)
### Recent course evaluations

<table>
<thead>
<tr>
<th>Term</th>
<th>Professor</th>
<th>Course Evaluation</th>
<th>Professor Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 03</td>
<td>Costis Maglaras</td>
<td>4.4</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>Costis Maglaras</td>
<td>4.7</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>Assaf Zeevi</td>
<td>4.5</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>Assaf Zeevi</td>
<td>4.5</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>Paul Thurman</td>
<td>4.7</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>Paul Thurman</td>
<td>4.5</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>David Juran</td>
<td>4.7</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>David Juran</td>
<td>4.6</td>
<td>4.7</td>
</tr>
<tr>
<td>Spring 04</td>
<td>Paul Glasserman</td>
<td>4.7</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>Paul Glasserman</td>
<td>4.9</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Sid Browne</td>
<td>3.1</td>
<td>2.9</td>
</tr>
<tr>
<td>Fall 04</td>
<td>Costis Maglaras</td>
<td>4.4</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>Costis Maglaras</td>
<td>4.7</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>Assaf Zeevi</td>
<td>4.7</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Assaf Zeevi</td>
<td>4.7</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>David Juran</td>
<td>4.6</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>David Juran</td>
<td>4.1</td>
<td>4.4</td>
</tr>
<tr>
<td></td>
<td>Nicolas Stier</td>
<td>3.8</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>Nicolas Stier</td>
<td>4.0</td>
<td>4.1</td>
</tr>
<tr>
<td>Spring 05</td>
<td>Fred Silverman</td>
<td>3.5</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>David Juran</td>
<td>4.5</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>David Juran</td>
<td>4.6</td>
<td>4.7</td>
</tr>
</tbody>
</table>

### EMBA course evaluations

<table>
<thead>
<tr>
<th>Term</th>
<th>Professor</th>
<th>Course Evaluation</th>
<th>Professor Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 03</td>
<td>Donald Sexton</td>
<td>4.3</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td>Donald Sexton</td>
<td>4.3</td>
<td>4.6</td>
</tr>
<tr>
<td>Spring 04</td>
<td>Donald Pardue</td>
<td>3.3</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td>Donald Pardue</td>
<td>2.9</td>
<td>2.8</td>
</tr>
<tr>
<td>Summer 04</td>
<td>Donald Sexton</td>
<td>4.5</td>
<td>4.8</td>
</tr>
<tr>
<td>Fall 04</td>
<td>Donald Sexton (EMBA)</td>
<td>3.8</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>Donald Sexton (EMBA)</td>
<td>4.0</td>
<td>4.1</td>
</tr>
<tr>
<td>Spring 05</td>
<td>David Juran</td>
<td>4.4</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>David Juran</td>
<td>4.2</td>
<td>4.4</td>
</tr>
</tbody>
</table>
Steps we took

- Read course materials—notes, cases, problem sets
- Interviewed two course instructors
  - Including course coordinator
- Held student focus group
  - Both 1st and 2nd year students
  - Academic reps from both regular and J-term

Topic coverage

- Provides a standard overview of statistics
  - Basic descriptive statistics
    - Includes ethics lecture on “how to lie with statistics”
  - Inferential statistics
    - Basic probability theory
      - Except for Juran sections, course no longer covers binomial distribution
    - Sampling theory
    - Estimation
    - Hypothesis testing
    - Regression
- Possible expansions
  - Exploratory data analysis
  - Reinstall binomial distribution
Student focus group

- Open-ended opportunity for comments
- Follow-up questions on
  - Time allocation to topics
  - Course materials
  - Data analysis packages
  - Exercises/Problem Sets
  - Exams
  - Pedagogy/Instructors
  - Peer tutors

Focus Group General Feedback

- Course seen as providing important skills used in subsequent courses

- Preterm math ramp-up necessary
  - Bimodal distribution of student math skills
  - Math camp not sufficient

- Provide better preterm instruction in EXCEL
  - Recommended model
    - "Training the Street; offered by Investment Banking Club for $200

- Course is too short
  - Decision models course too long for its content
    - Combine the two courses

- Course is too dense
  - Not enough time between classes to absorb material
  - Learn only mechanics; no time to develop statistical intuition
Specific Student and Instructor Feedback and Concerns

• Time Allocation to Course Topics
  – Desirable to spend more time on regression
    • Currently last 4 lectures
    • Recommendation seconded by both course instructors

• Course materials
  – Course note-book and Case book well received
    • Nobody looks at any additional materials
      – Supplementary text book
      – Bernstein’s “Against the gods: The remarkable study of risk” book
    – Juran course materials three times as voluminous
      • Desirable to standardize materials across all sections

• Data analysis packages
  – EXCEL seen as sufficient
    • No need for other packages like Stata
    • Yet, need for better training in EXCEL
    • EXCEL use should be demonstrated more in lectures

Specific Student and Instructor Feedback and Concerns

• Graded Exercises/Problem Sets
  – Seen as adequate and useful
  – Graded timely and with detailed feedback
  – 5-6 graded problem sets in 6 weeks seen as too rushed
  – Group format (up to 3 students) considered helpful, with group members acting as informal tutors to each other

• Peer Tutors
  – Seen as extremely valuable
  – Availability was problematic in recent year

• Exams
  – Students are happy with paper-and-pencil format
Specific Student and Instructor Feedback and Concerns

• Pedagogy/Instructors
  – Instructors seen as excellent
    • Provide different modes of explaining course materials (e.g., visually vs. numerically)
  – Technique of developing an argument in real-time on overhead transparency or board seen as valuable
    • Students need to think and write along
  – More active student participation in lectures desired
    • Have student volunteer solve a practice problem on the board
  – Desire to get more previews of where specific statistics or techniques will be used in subsequent courses and on the job
    • Done well by one instructor (former hedge fund manager)

Conclusions and Recommendations

• Course is in very good shape, but there is room for small improvements

• Rethink (or at very least, re-explain to students) course schedule and topic coverage and relationship to Decision Models course
  – Intense first-semester early Statistics experience seems to unite clusters, but also creates anxieties
    • Explain value of experience better
    • Reduce anxiety by better preparation and ready availability of peer tutors
Conclusions and Recommendations

- Provide better incentives for peer tutors
  - Earlier recruitment efforts by Student Affairs
  - More and more public recognition (e.g., by dean's office)

- Better math and EXCEL preparation should be provided
  - Reorganize Math Bootcamp
  - What happened to UNext online math course?
  - Develop or import EXCEL workshop