Course Syllabus

January 27th – March 5th: Tuesdays and Thursdays

Professor: Fabrizio Ferri
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Office Hours: Mondays, 3:00 – 5:00 pm
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Assistants: Terrance Gabriel (ttg1@columbia.edu) – West Cubicle, 6th Floor Uris Hall
Katie Brucas (kb2554@columbia.edu) – West Cubicle, 6th Floor Uris Hall

Section 1: 10:45 am – 12:15 pm
Section 2: 2:15 pm – 3:45 pm
Section 3: 4:00pm – 5:30 pm
Section 1: Uris Hall 332
Section 2: Uris Hall 330
Section 3: Uris Hall 330

Course Overview and Objectives

Managing the modern firm requires a significant amount of financial and non-financial information about the firm’s products, processes, assets, and customers, as well as the external environment. This information is a key input to operational and strategic decisions: managing product-line portfolios, setting prices, managing customers’ relations, translating the strategy into a series of objectives, measures and targets, monitoring strategy implementation.

The main objective of this course is for the students to learn about measurement systems necessary to articulate, implement, monitor and refine an organization’s strategy and develop a comprehensive framework to understand the broader implications of measurement systems for the organization, so as to be able to make more informed (and, thus, “better”) decisions in an uncertain environment. To develop such a framework, students will be required to become familiar with the mechanics of a number of tools, but ultimately the emphasis will be on obtaining a good grasp of the key conceptual issues.

Key concepts

- Cost information for decision-making: fixed vs. variable costs, cost-volume profit analysis
- Measuring and managing product and customer performance: product profitability (traditional and activity-based costing, cost of capacity) and customer profitability
- Measuring and managing firm performance: budgets, variance analysis, target setting and incentive schemes
- Linking measurement systems to strategy: strategy maps and balanced scorecard
- A broader view of control systems: the levers of control framework
Class Meetings
Class time will primarily be a mix of lectures and case analysis. I believe that an interactive learning environment and a focus on real-world experiences allow for a deeper understanding of management accounting issues and result in greater appreciation of their importance in the broader context of complex organizations. Hence, the main focus is on case discussion. For case discussion to be effective, it is crucial that students will be active participants in class, providing critical analyses of key issues and debating alternative courses of action. In turn, this requires careful preparation of the case and other assigned readings before class. I will randomly call on students when discussing cases and students should be ready to present their analyses or comment on others' analyses. To help in preparing the cases, I will assign a set of detailed guiding questions for each case. In my experience, preparing cases in teams is very productive. Thus, you are encouraged to do so. I prefer students not to use laptops in class.

Teaching Materials
Reading material is in the course packet. Class handouts will be distributed before each class. Optional textbook (available on reserve at the library) is Horngren, Datar and Rajan (HDR) Cost-Accounting, a Managerial Emphasis, Fourteenth Edition.

Website with course information
You may access the course website through the CANVAS system.

Grading
The course grade will be determined as follows:

- Participation 15%
- Assignments (best 2 out of 3) 15%
- Final Exam 70%

**Final Exam:** The final exam will be in-class, closed-book. You may use a double sided sheet of notes (typed or hand written). You can use a computer and upload your final answers, or you can hand write your answers (using a pen, not a pencil). You can bring a calculator. The final exam is currently scheduled for (TBD: between March 10 and March 13)

**Assignments:** There will be 3 graded Assignments (Type B) due on February 3, February 17 and March 3, by 4:00pm. You will be required to upload them via Canvas. The 15% grade will be based on the best two of the three assignments.

**Class participation:** The grade for class participation will depend on the quality of your interaction and participation in class discussions.

Final grade appeals must be made in writing.

Honor Code
Students are expected to adhere to Columbia Business School’s Code of Ethical and Professional Conduct and Integrity Code (the code). Failure to comply with the code may affect either your grade in the course or your standing in the Columbia Business School community or both.

<table>
<thead>
<tr>
<th>Type</th>
<th>Designation</th>
<th>Discussion of Concepts</th>
<th>Preparation of Submission</th>
<th>Grade</th>
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<tbody>
<tr>
<td>B</td>
<td>Group/Individual</td>
<td>Permitted</td>
<td>Individually (No sharing of any portion of the submission.)</td>
<td>Individual</td>
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</table>
## Course Calendar At-A-Glance

<table>
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<th>Date</th>
<th>Session</th>
<th>Topic</th>
<th>Case to prepare</th>
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<td>Jan 27</td>
<td>1</td>
<td>Course Introduction. Variable vs fixed costs: using CVP analysis for decision making:</td>
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<tr>
<td>Jan 29</td>
<td>2</td>
<td>Measuring and managing the performance of your products and customers</td>
<td>Seligram ETO</td>
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<td>Feb 3</td>
<td>3</td>
<td>What is the cost of a product? Allocating indirect costs</td>
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<tr>
<td>Feb 5</td>
<td>4</td>
<td>Measuring and managing the cost of capacity.</td>
<td>Wilkerson</td>
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<td>Feb 10</td>
<td>5</td>
<td>Activity-based costing (ABC)</td>
<td>Kanthal, Ethical Drugs</td>
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<td>Feb 12</td>
<td>6</td>
<td>Beyond products: customer profitability</td>
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<tr>
<td>Feb 17</td>
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<td>Time-Driven Activity-Based Costing and Intro to Budgeting</td>
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<td>Feb 19</td>
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<td>Budgeting: Building a Profit Plan</td>
<td>Cafes Monte Bianco</td>
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<td>Feb 24</td>
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<td>Variance analysis I</td>
<td>Musimundo</td>
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<td>Feb 26</td>
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<td>Variance analysis II</td>
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<td>Mar 3</td>
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<td>Target setting and incentives: the EVA solution</td>
<td>TWA Parts (Abridged), Store 24</td>
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<td>Mar 5</td>
<td>12</td>
<td>Translating and testing the strategy: strategy maps and balanced scorecard</td>
<td>ATH Microtechnologies (A,B)</td>
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<td>TBD</td>
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<td>Final Exam</td>
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# Session 1
## Management Accounting as Management System
### Introduction to cost concepts and applications

**Tuesday, January 27**

<table>
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<th>Topics</th>
<th>Readings</th>
<th>Prepare</th>
<th>Practice Problems</th>
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<tbody>
<tr>
<td>- Management accounting as management system: the link to strategy</td>
<td>- &quot;Mastering the Management System&quot; (course packet)</td>
<td>- Read article “Mastering the Management System” (course packet).</td>
<td>Practice problems: HDR 2-18, 2-19, 2-20, 2-23. HDR 3-19, 3-24, 3-25.</td>
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<tr>
<td>- Cost concepts: variable and fixed costs, direct and indirect costs</td>
<td>- Optional reading from HDR: Ch.2 pp.26-38 (cost concepts); Ch.3 pp.62-82 (cost-volume-profit analysis)</td>
<td>- Review cost concepts from your Managerial Economics class.</td>
<td>Problems and solutions are posted online. You can practice these problems after class.</td>
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<td>- Using cost concepts for decision-making: cost-volume profit analysis</td>
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## Session Plan

After presenting objectives and structure of the course, we will introduce some key cost concepts that will be used throughout the course: direct and indirect costs, variable and fixed costs.

The distinction between variable and fixed costs allows us to use the so-called cost-volume-profit (CVP) analysis – a set of tools that exploits the relation between cost, prices and volume for decision-making purposes. We will discuss a number of key concepts – contribution margin, break-even point and operating leverage –, identify some formulas that can be used to measure these constructs and review a number of applications. We will then review the assumptions underlying CVP analysis and examine its limitations.
Measuring and managing the performance of your products and customers

<table>
<thead>
<tr>
<th>Session 2</th>
<th>What is the cost of a product? Allocating indirect costs</th>
<th>Thursday, January 29</th>
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**Topics**
- Mechanics of two-stage allocations: cost pools and cost drivers.
- Limits of “traditional” costing systems.
- Information vs incentives: dual role of costing systems

**Readings**
- Case study *Seligram, Inc.: Electronic Testing Operations* in the course packet
- Optional reading from HDR: Ch.2 pp.27-30 (definition of direct and indirect costs) and pp.36-38 (classification of manufacturing costs)

**Prepare**
Read assigned case and address the following questions:

1. What is the problem with the existing costing system at ETO?
2. Calculate the reported costs of the five components described in the case (Exhibit 6) under:
   1. the existing system;
   2. the system proposed by the accounting manager;
   3. the system proposed by the consultant.
3. Which system is preferable? Why?
4. Consider the new machine described at the end of the case. Would you treat the new machine as a separate cost center or as part of the main test room? Why? (answer this question qualitatively, ignore the issue of how to quantify the cost of the new machine)

**Session Plan**
We will devote the session to discussing the *Seligram* case. The case gives us an opportunity to appreciate the need for proper cost allocations, understand the mechanics of two-stage allocations and the effect of adding cost pools and changing cost drivers. We will also examine the limits of this type of volume-based cost allocations
Session 3  Measuring and managing the cost of capacity

Tuesday, February 3

Topics  
- Dealing with the cost of capacity in a costing system.

Readings  
- *Autobest Products* (course packet).
- *Microgene* (course packet)

Prepare  
First, read the *Autobest Products* exercise and answer the questions at the end of the exercise.

Second, read the *Microgene* short case and address the following questions:

1. The gross margins of cartridges in the 2009 Revised Budget are dramatically different from the original 2009 Budget. Why?
2. Can you show how the overhead costs of $26 and $50 are computed?
3. Is this costing system providing useful information? If not, how can it be modified?

Finally, back to the case study *Seligram, Inc.: Electronic Testing Operations* in the course packet. Address the following question:

1. Assume we treat the overhead cost associated with the new machine at the end of the case as a separate cost pool (see previous class). How would you go about computing the overhead rate for this cost pool?

Session Plan  
We will spend the first part of the class on the *Autobest Products* exercise. Then, we will discuss the *Microgene* case, focusing on the questions above. Finally, we will spend the remaining time re-examining the problem of the new machine in the *Seligram* case.

The three settings have in common the problem of how to treat the cost of capacity in the context of a two-stage cost allocation system.
If time allows, we will also discuss some implications for financial reporting.
Topics
- Activity-based costing.
- Differences from and advantages over “traditional” costing systems.
- Translating activity-based costing into improved profitability.

Readings
- “Introduction to Activity-Based Costing” (course packet)
- Case study Wilkerson Company in the course packet

Prepare
After reading the Wilkerson case, answer the following questions:

1. Using a two-stage cost-allocation diagram, describe Wilkerson’s existing cost system and the alternative activity-based costing (ABC) system.
2. Compute the profitability of Wilkerson’s three product lines under the ABC system and compare it with the existing system. What causes the differences?
3. Based on the ABC analysis, what actions could Wilkerson’s management team consider to improve the company’s profitability?

Session Plan
We will discuss the Wilkerson case as an example of activity-based costing (ABC) and activity-based management (ABM). We will examine the advantages of ABC over traditional systems and discuss its implementation challenges.
### Session 5
#### Beyond Products: Customer Profitability

**Monday, February 10**

**Topics**
- Use of ABC to measure customer profitability
- Using customer profitability for decision-making
- Challenges in implementing ABC and new trends

**Readings**
- “Measuring and Managing Customer Profitability” (course packet)
- Kanthal case (course packet)

**Prepare**

Read the Kanthal case, but do not worry about the numbers and focus instead on (i) why they introduced the new system (Kanthal 90 Account Management System) and (ii) what they are learning with it. Also, what would you do with the two large unprofitable customers revealed by the new system?

Solve the following problem (loosely based on the new system adopted by Kanthal): consider a product line whose products generate a 50% margin (after subtracting volume-related direct and indirect manufacturing and volume-related SG&A). The extra manufacturing cost to handle a production order for a non-stocked item is 2,250. The cost for handling an individual order is 750. Using this information:

1) Compare the operating profit of two (small) orders, both for $2,000: Order #1 is for a stocked item and Order #2 is for a non-stocked item. What do we learn about small orders? What are the actionable implications?

2) Compare the operating profit of two (large) customers. Both purchased goods for $160,000: Customer 1 makes 3 orders, for 3 different non-stocked items; Customer 2 makes 28 orders (6 for stocked items, 22 for different non-stocked items). What do we learn about large customers? What are the actionable implications?

**Session Plan**

Often some overhead costs are incurred to serve customers and satisfy their requirements. This is particularly true for non-manufacturing costs, such as the costs often lumped in financial reports as “sales, general and administrative” costs (SG&A). When firms are managed around customers’ needs, the costing system should be modified accordingly. In the first part of the class we will look at Kanthal, an example of a company that dramatically changed its operations after designing its cost systems around its customers and developing proper measures of customer profitability.

In the second half of the class, we will discuss the practical challenges in the implementation of ABC and some new trends.
Session 6       Time-Driven ABC and the Link to Budgeting       Thursday, February 12

Topics
- ABC Implementation challenges
- New trends in ABC techniques: Time-Driven ABC
- Activity-Based Budgeting

Readings
- “Time-Driven Activity-Based Costing (Course Pack)
- Sippican Corporation Case A&B (Course Pack)

Session Plan
In this session we will discuss implementation challenges that arise when firms adopt an ABC system and discuss how they are addressed in a recent development called “time-driven” ABC.

Then, to introduce the next module, we will show how an ABC system can be used to budget capacity needs.

Prepare
- In Sippican (A), using Time-Driven ABC, compute the profitability of the three product lines and compare it with the profitability under the old system.
- In Sippican (B), estimate the resources required by Knight’s forecasted sales and production plan in Exhibit 1 (that is, estimate the hours of DL, machine, setup labor, receiving and production, etc.)
- Then, based on the cost associated with those resource requirements, prepare a Pro Forma product line Income Statement based on the new plan
Session 7  Budgeting: Building a Profit Plan  Tuesday, February 17

Topics  
• Preparing a Budget  
• Using Budgets to communicate strategy

Readings  Cafes Monte Bianco (Course packet)  
Conflicting roles in Budgeting for Operations (on Canvas – under File-Readings)

Prepare  Read the case and answer the following questions:

Using the data in Exhibit 5 and the other information in the case, prepare a 2001 pro forma income statement for the scenario where the firm produces private-brand coffee. Compute the profit and the ROE. Also, estimate the cash available at the end of 2001 under the same scenario (hint: use the indirect method for the cash flow statement). Will the firm face a liquidity problem? If so, when (hint: prepare monthly cash flow statements, using the direct method)  
Make your assumptions explicit and identify how critical they are to the results of your analysis. Would you recommend to CEO to adopt this strategy?

(Optional) Using the information in the case (particularly Exhibit 2 and 3), can you identify the mix of premium and private brand coffee production yielding the highest margin (hint: focus on contribution margin net of the advertising expense)?

The data in the case are in an Excel file on Canvas under Files-CafeMonteBianco

Session Plan  In this session we will examine how to build a profit plan and how to use it to communicate strategy

Practice Problems
Topics
- The role of budgets as control mechanism
- Variance analysis

Readings
Read the short case “Dummy jeans” (course packet)
(Optional); HFR pp.182-187, 199-201, 226-240

Prepare
Read the short case “Dummy jeans” (course packet) and answer the question at the end of the case

Session Plan
In this session we introduce the role of budgets as control mechanism and examine a performance measurement tool called variance analysis – that is the analysis of deviations from a pre-established target. We will use the short case Dummy jeans as an illustration of some of the variance analysis formulas and discuss other applications.

Practice Problems
HDR7-34, 7-40. Problems and solutions are posted online. You can practice these Problems after class.
Session 9  
Variance Analysis II  
Tuesday, February 24

Topics  
- The role of budgets as control mechanism  
- Variance analysis  
- Target setting and re-setting  
- Accountability vs Controllability

Readings  
*Dummy Jeans and Musimundo* case (course packet)  
(Optional); HFR pp. 248-249, 518-523

Prepare  
After reading the Dummy Jeans case, using the techniques examined in the last class, assess pros & cons of the bonus plan for Stan, Mary & Dan and suggest ways to change it. After reading the case Musimundo, answer the following questions:

1. Musimundo operates in a very uncertain environment. What role does the budgeting process serve in such environment?

2. As shown on page 14, in the first six months of 2004 Musimundo has reported a favorable variance of AR $449,000 in Gross Margin Before Variable Costs, since the actual Gross Margin Before Variable Costs (AR $12,080,000) was higher than budgeted (AR $11,631,000). [Note: the Gross Margin Before Variable Costs on p.14 is the difference between Revenues and COGS on p.13]. How much of this AR $449,000 variance is due to the variance in revenues versus the variance in COGS? How much of the variance in revenues is due to variance in price versus variance in quantities sold? And how much of the variance in price is really due to a variance in the price of the various products (“pure price variance”) as opposed to a variance in the product mix? The Variance Analysis Template File will help you answer these questions (the file also presents all the relevant information in one place.). In particular, in Template 1 focus on the decomposition of revenue variance, since the decomposition of COGS variance is identical except that it uses unit cost instead of price.

3. What is your assessment of the sales and profit performance of the music product line (CDs and cassettes)? Again, try to decompose the variance in the Gross Margin using the Variance Analysis Template File (see Template 2). In particular, try to understand the computation of market size and market share variances.

4. Should the board approve Nalda’s request to change the budget targets for the year? If so, how would you change them?

Session Plan  
We continue our examination of the role of budget and variance analysis, looking at the case of Musimundo, an Argentine entertainment retailer operating in an extremely difficult and uncertain economic environment. Can anything be learned from variance analysis in this context? Does it make sense to have budgets and set targets in presence of so much uncertainty? Should employee compensation be linked to such targets?
**Session 10  **  **Target setting and incentives; the EVA solution**  **Thursday, February 26**

**Topics**
- Choosing the “right” performance measure
- Designing an incentive plan
- Target setting
- Organizational design issues

**Readings**
*Vyaderm Pharmaceuticals* case (course packet)

**Prepare**
After reading the case, please answer the following questions:

1. Why has Maurice Vedrine decided to introduce EVA as the financial performance measure?
2. Do you agree with the way targets are set?
3. What should Vedrine do about the bonus for the Dermatology Division? As part of your analysis, please try to do the calculations requested by Vedrine at the end of page 8 of the case. To get started, use the EVA computations file, which in turn uses the R&D Amortization and the Advertising Amortization schedules.

**Session Plan**
In this session we will examine the implementation of an “EVA” (Economic Value Added) management system - the attempt to introduce a single, comprehensive performance measure and design an incentive plan closely tied to this measure. We will do so by looking at a real case, Vyaderm Pharmaceuticals.

The case will give us the opportunity to explore a number of questions: what are the properties of the ideal performance measure? Is the metric that best measures performance also the one that best motivates employees to perform? What are the challenges in designing and calibrating an incentive plan? What are the implications in terms of organizational design? What are the risks and limitations of an EVA-type system?
Translate the Strategy: Strategy maps and Balanced Scorecard

Tuesday, March 3rd

Topics

- Limits of financial performance measures and benefits of non-financial performance measures
- Strategy maps and balanced scorecard as tools to translate strategy into specific objectives, targets, measure and initiatives.
- Testing and Adapting the strategy: the causal links of the strategy maps

Readings

- TWA Parts (Abridged) case (course packet)
- Store 24 case (course packet)
- "Linking the Balanced Scorecard to Strategy” (course packet)
- “Having Trouble with Your Strategy? Then Map It” (course packet)
- I also recommend you re-read pp.6-7 (paragraph on Stage 2) and pp.13-15 (par. on Stage 5) of the HBR article “Mastering the Management System”.

Prepare

After reading the case TWA Parts (Abridged), answer the following questions (be prepared to provide specific suggestions for the last question):

1. Why did TWA Parts decide to develop a strategy map and a balanced scorecard (BSC)?
2. How well do the strategy map and BSC of the two divisions reflect the divisions’ strategies?
3. How helpful are the strategy map and BSC of the two divisions in assessing the divisions’ performance?
4. How would you change strategy maps and BSC of the two divisions?

As for the Store 24 case, how would you use the BSC to determine whether the Ban Boredom strategy is working? Also: how useful are the in-store comments cards and the walk-through audits in assessing store performance?

Session Plan

On the first day of the course, we introduced the “closed-loop” management system linking strategy and operations (review the exhibit on p.3 of the HBR article “Mastering the Management System”). In this session, we will examine “Stage 2” and “Stage 5” of the loop - that is, (i) translating the strategy into a series of specific strategic objectives and initiatives and developing appropriate measures and targets and (ii) testing and adapting the strategy.

To do so, we will discuss the case of TWA Parts and the case of Store 24. The cases give us the opportunity to explore a number of key questions: why do we need non-financial performance measures? How to choose the relevant performance measures in the balanced scorecards? In what sense is balanced? What are the linkages about the four perspectives? How to test the strategy?

We will then conclude with some examples of firms using BSC and a discussion of the implementation challenges.
Session 12  The levers of control  Thursday, March 5

Topics  
- Beyond incentives: balancing the tension between profit, growth and control
- The four levers of control: belief systems, boundary systems, diagnostic systems and interactive systems

Readings  
- “Control in an Age of Empowerment” by Simons, R. (course packet)
- ATH Micro Technologies Inc. (A) case (course packet)
- ATH Micro Technologies Inc. (B) case (course packet)

Prepare  
As you read the ATH Microtechnologies (A) and (B) case, just skim through the questions the end of each case. Focus instead on understanding the pros and cons of the “earnout” structure described in the case.

Session Plan  
We will discuss the case ATH Microtechnologies – a disguised name for a real start-up company in the medical devices industry. The case details the evolution of a company since its founding as it faces a number of control problems. In doing so, it highlights the challenges and importance of adopting the appropriate control systems in a high-growth, dynamic environment.

The lessons of the case extend beyond this company to virtually every organization and the economy as whole, as highlighted by the recent financial crisis.

In preparing the case, you will find useful to refer to the framework of the ‘levers of control’ developed by Robert Simons at the Harvard Business School (see article “Control in an Age of Empowerment”). Most control systems we have analyzed throughout the course appear to fall under the heading of “diagnostics” systems. The ‘levers of control’ framework adds two key dimensions. First, it highlights the importance of how control systems are used (e.g. “interactive” versus “diagnostic”). Second, it reminds us of the importance of softer control systems which determine (or reflect) the culture of an organization (“belief” and “boundary” systems.)

We will then conclude with a few final thoughts about the course.