Department of Quantitative Methods and Information Technology
John Gokongwei School of Management
Loyola Schools
Ateneo de Manila University

COURSE SYLLABUS

Course Number: POM 104
Title: Quantitative Methods & Production/Operations Management
Department: Department of Quantitative Methods and Information Technology
School: John Gokongwei School of Management
School Year: SY 2012 - 2013
Semester: First
Credit: 5 Units
Lecturer:
Schedule & Venue:

Course Description

POM 104 is a 5-unit, combined statistics and operations management course. It covers the relevant concepts of production and operations management as well as the quantitative tools for data analysis and business decision making. By the end of the semester, the student should be able to appreciate the key decision situations that confront the operations manager and apply analytical techniques to arrive at better decisions.

A. Course Objective

By the end of this course, the student should be able to understand and appreciate the basic concepts of Production/Operations Management; know its importance in the success of the business; and learn the major POM concepts, quantitative tools and techniques that are used in tactical and strategic decisions. Other main objectives will include:

- To understand the role and contribution of operations towards achieving competitive advantage in the marketplace.
- To understand the relationship between operations and other business functions, such as Marketing, Finance, Accounting, and Human Resources.
- To understand and apply systematic approaches (qualitative and quantitative) in designing and managing operations

D. Course Outline

OPERATIONS MANAGEMENT (Thursdays)

Week	TOPIC	Readings/Assignments
1	Course Overview Introduction to OpMan • The Competitiveness Challenge • Strategy Formulation: Defining How Firms Compete	RH Ch1,2
	Translating Strategy into Action • The Balanced Scorecard • Strategy Maps	HBR The Balanced Scorecard HBR Strategy Mapping
2	Developing a Process View of the Organization • The Systems Approach o business clusters o value chain o Key Business Processes (4Ms) o PQA classification • Process documentation tools	Ch4 – The Cluster Porter – Ch2 Value Chain Brache: What is a Process

	• Measuring Process Performance	
3/4	Operations Management: Life Cycle View • Life Cycle Analysis • Key Decision Points in OpMan	
	Product Design • Defining quality: voice of customer • life cycle design • product standards (US, EU, Japan, ISO, BPS/BFAD, Halal, TUV/UL/Medlabs) • House of Quality	RH Ch5 UNIDO 05
	Service Design • Defining Service Quality • Service Blueprinting	
5/6	Process Design • Work Breakdown Structures • Technology & Innovation o Challenges o Needs Analysis o Evaluation: Business Case Approach • Benchmarking • Building Quality into Processes o Failure Mode and Effects Analysis o Pokayoke Methods	RH Ch7 UNIDO 03, 04, 06, 10
	Human Resources Planning Job Design • Work Measurement • Work Methods • Learning Curve Analysis	RH Ch10 UNIDO 13, 14
7/8	Quality Management • Defining Quality • Cost of Quality • TQM Tools • 6-Sigma Overview • Recognizing Quality o Malcolm Baldrige Award o ISO Certification	RH Ch6
EXAM 1		
9/10	Capacity Management • Demand Analysis: Forecasting Techniques • Aggregate Planning & Capacity Options • Measuring Capacity: Bottleneck Analysis • Right-sizing: Break-even Analysis • Waiting Line Management	RH Ch4, Sup7, 13 UNIDO 08, 11, 12
11/12	Facility Planning & Management • Location Planning o selection criteria o EIA/ECC o evaluation techniques • Workplace Design o Ergonomics – Human Factors Engineering o Occupational Safety and Health o Security Management • Facility Layout o Design Objectives: Load Distance Concept o Layout Options	RH Ch8 UNIDO 15, 16 RH Ch9 UNIDO 07
13	Production Planning & Scheduling	RH Ch3, 15

	• PERT-CPM • Job Scheduling	
14/15	Materials Management • Unit Load Handling • Alternative Technologies Supply Chain Management • Supplier Management • Just-in-Time and Lean Operations • Inventory Management (Independent Demand) o ABC Analysis o Single Period – Newsboy Problem o EOQ models o Multi-level inventory issues • Material Requirements Planning (Dependent Demand)	Materials Handling Ch2,3 RH Ch11, 12, 14,16 UNIDO 09,
EXAM 2		
16	Managing Outbound Logistics • Transportation Model • Vehicle Routing and Scheduling	RH Supp C, Tutorial 5
EXAM 3 (Option)		

REFERENCES: Operations Management

- Render & Heizer, *Operations Management 10e*, Pearson Southeast Asia 2011.
- United Nations Industrial Development Organization (UNIDO), *Investment Project Preparation and Appraisal, Module3 – Technical Analysis*, Vienna 2005.
- **NOTE: Readings will be uploaded to e-group**

BUSINESS STATISTICS (Tuesdays)

Topics and Coverage	Reference	Supplementary Notes
Introduction to Business Statistics ● Management Decisions and Business Research ● Statistical Research Process ● Overview of Statistical Tools ● Data Types and Sources ● Survey Questionnaire Design	Chapter 1	CGS Ch1 PSB Ch3
Descriptive Statistics ● Tabular Methods ● Visual and Graphical Methods ● Numerical Methods	Chapter 2-3	CGS Ch2 Creating Charts in Excel
Introduction to Probability ● Concept of Probability ● Properties of Sample Spaces and Events ● Counting Techniques ● Conditional Probability and Bayes' Theorem	Chapter 4	MSS Ch5,6 PSB Ch5
Introduction to Decision Analysis ● Decision Trees ● Decision Criteria ● Perfect and Imperfect Information	Chapter 19	

Discrete Probability Distributions ● Properties of Discrete Probability Distributions ● Binomial Distribution ● Poisson Distribution ● Poisson Approximation to Binomial	Chapter 5	CGS Ch5
Continuous Probability Distributions ● Properties of Continuous Probability Distributions ● Uniform Distribution ● Exponential Distribution ● Normal Distribution ● Normal Approximation to the Binomial ● Triangular Distribution Chi-Square Tests (Goodness of Fit)	Chapter 6	CGS Ch5
LONG TEST 1		
Sampling Distribution ● Sampling Distribution of the Sample Mean ● Sampling Distribution of the Sample Proportion	Chapter 7	CGS Ch6
Confidence Intervals ● Confidence Intervals for the Population Mean ● Confidence Intervals for the Population Proportion ● Sample Size Determination	Chapter 8	CGS Ch7 MSS Ch7 PSB Ch7,8
Hypothesis Testing ● Developing the Null and Alternative Hypotheses ● Type I and Type II Errors ● One-Tailed Tests/Two-Tailed Tests	Chapter 9	CGS Ch8 MSS Ch8
Two-Population Hypothesis Testing (Optional: Excel/MegaStat) ● Independent Samples ● Paired Differences/Matched Samples	Chapter 10	CGS Ch9
LONG TEST 2		
Chi-Square Tests ● Tests for Independence	Chapter 12	PSB Ch9
Analysis of Variance ● Basic Concepts of Experimental Design ● One-Way Analysis of Variance (Completely Randomized Design) ● Randomized Block Design ● Factorial Design	Chapter 11	CGS Ch10 PSB Ch14,15
Simple Linear Regression ● Simple Linear Regression Model ● Model Assumptions ● Testing the Significance of the Slope, Intercept and Model	Chapter 13	CGS Ch11 MSS Ch9 PSB Ch10,11
LONG TEST 3		

REFERENCES: Business Statistics

- Bowerman ,O'Connell and Murphree. ***Business Statistics in Practice***. 6th Edition, McGraw-Hill Irwin, 2011.

Suggested Readings

CGS Larry Gonick & Woollcott Smith. ***Cartoon Guide to Statistics***, Harper-Collins Publishers 1983.
MSS Michael Wood. ***Making Sense of Statistics – A Non-Mathematical Approach***, Palgrave-MacMillan, 2003.
PSB Moore, McCabe, Alwan, Craig, Duckworth. ***The Practice of Statistics for Business and Economics***, W.H. Freeman & Company, 2011.
DAM Albright, Winston, Zappe. ***Data Analysis for Managers wtih Microsoft Excel, 2e.***

F. Course Requirements & Grade Equivalents

Group Project		15%	3.71 – 4.00	A
Partial Papers	3%		3.31 – 3.70	B+
Final Paper	6%		2.81 – 3.30	B
Final Presentation	6%		2.31 – 2.80	C+
Departmental Exams (5@15%)		75%	1.81 – 2.30	C
Quizzes, HW & Class Participation		10%	0.81 – 1.80	D
Total		100%	0.00 – 0.80	F

G. Classroom Policies

1. Attendance will be checked regularly. A student who is not in the room during attendance check will be considered absent. A student is entitled to a maximum of six (6) cuts

2. The use of cellphones, ipods, MP3 players, and other electronic devices other than laptops or calculators is strictly prohibited. For any violation, the student concerned will be asked to leave the classroom and will be marked absent for the meeting.

3. The SOM dress code will be strictly followed. A student in inappropriate attire will be asked to leave the classroom and will be marked absent for the meeting.

4. Academic dishonesty in any form will warrant a grade of F for the requirement. In case the violation is committed in a major requirement (long tests, group project), the grade of F will be for the entire course.

5. Group Project: Enterprise Start-up

   Each group is required to submit partial project papers to serve as periodic updates of their progress in completing the Company Audit. These project papers will be graded
   - The final written paper should follow the format discussed in class. There will be a mock defense (classroom presentation of the Company Audit) prior to the final oral presentation. The final oral presentation will be graded by an outside panel of judges
   - Each student will be asked to force rank their group members at the end of the semester. Grades for group work will be adjusted upward or downward to account for each individual's relative contribution to the group effort

H. Consultation Hours TTh, 1030am -1200nn or by appointment