Business Analytics II

ECB 354 – Block 4	Location: CH118 MWF: 9:30-12:30 TuTh: 12noon-3pm - *except where noted*
Instructor:	Santhi Hejeebu
Office Hours:	10:00-11:00am TuTh or by appointment
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Course Overview:

This course enables students to develop spreadsheet models of business processes for more effective managerial decisions. The course emphasizes an analytical, data-driven approach for identifying potential opportunities and improvements in a firm's value chain. Students will learn a variety of optimization models as they apply to various business situations such as workforce scheduling and operations management. Students will also discover how managers account for uncertainty in decision-making through simulation models. The course extensively uses MS Excel.

What will you learn?

Over the many courses you take at Cornell College, you will strive toward several important educational goals. In ECB354, students will

- ***Integrate and apply ideas*** emerging from multiple disciplines, including economics and statistics.
- ***Communicate effectively*** through dialogue with classmates and business partners, written assignments, and visual and oral presentations.
- ***Reason quantitatively*** about internal operations within businesses.

Required Readings:

Management Science: The Art of Modeling with Spreadsheets, 5th edition, by Stephen G. Powell and Kenneth R. Baker, Wiley; 2017. **[PB]**

Grading:

Your final grade will depend on your problem sets and the quality of your in-class conduct. The specific weights assigned to each activity are as follows:

Homework (best of 10 of 12)	50
Exam1	100
Exam2	100
Case summary and presentation	50
Professional conduct	180
Total Points	480

Attendance: I expect you to attend class on time, every single day. Lateness or an absence will only be excused in the event of illness, family emergencies, or participation in College-sponsored activities. These events require proper documentation. *Absences will reduce your grade by **50** points with each occurrence.*

Professional Conduct
A portion of your grade depends on the way you conduct yourself. As part of your preparation for the business world, this class explicitly rewards professional conduct. You should arrive on time every day. Business casual attire is required on days we have guests or presentations. Professional conduct includes more than full attendance and respectable attire. In addition, you are expected to be prepared for the day's agenda: Be mentally present and ready to participate actively in class discussion.

"Deep work" or "focused work" can result from Cornell's OCAAT system coupled with good study habits. The following **Digital Policy** helps you develop strong study habits while in class.

***Digital Content - Keep it professional* –** Students are strongly encouraged to discontinue consuming all personal digital content 15 minutes prior to class and during the 3 hours of class time, including during breaks.

***Digital Tools – Keep it professional* –** The classroom is equipped with laptops. You may use your own laptop, provided you have access to the required software tools and all pop-up notifications are disabled. The necessary software tools expected in the course include: a) Analytical Solver Platform is required throughout the course. It is available from Frontline Systems for download to your personal machine. b) Moodle will be necessary for all HW submissions unless otherwise indicated.

Additional Policies:
Cornell College is committed to providing equal educational opportunities to all students. If you have a documented learning disability and will need any accommodation in this course, you **must** request the accommodation(s) from Professor Hejeebu as early as possible and no later than the third day of the term. Additional information about the policies and procedures for accommodation of learning disabilities is available on the Cornell web site at http://www.cornellcollege.edu/academic_affairs/disabilities/.

Cornell College expects all members of the Cornell community to act with academic integrity. An important aspect of academic integrity is respecting the work of others. A student is expected to explicitly acknowledge ideas, claims, observations, or data of others, unless generally known. When a piece of work is submitted for credit, a student is asserting that the submission is her or his work unless there is a citation of a specific source. If there is no appropriate acknowledgement of sources, whether intended or not, this may constitute a violation of the College's requirement for honesty in academic work and may be treated as a case of academic dishonesty. The procedures regarding how the College deals with cases of academic dishonesty appear in The Compass, our student handbook, under the heading "Academic Policies – Honesty in Academic Work."

Schedule of Topics

Day			Topic	Readings	Tonight's HW Read the next chapter & complete the following
1	Mar 18	M	Groundwork – syllabus, textbook, ASP software, lab. Content – Intro to modeling, Excel fundamentals	**PB 1** **App. 1**	**HW1** Read Ch2 Read The Racquetball Racket case, p. 465-6; Do Ch2, p. 46, #1-8 & p. 47, #1-5.
2	19	T	Ch2 - Modelling as problem solving; Ch3 - Spreadsheet Design HW1 review	**PB 2** **PB 3**	**HW2** Read Medical Supplies for Banjul case, p. 467; Do Ch3, p.69-70, #2,13.
3	20	W	HW2 review Ch 4- Analysis Using Spreadsheets; Optimization in Economics	**PB 4**	**HW3** Do Ch4, pp. 85-86, #2,13. Review Ragsdale chapters 2 & 8.
			OPTIMIZATION MODELS		
4	21	Th	Review HW3 Graphical introduction to optimization - EOQ Inventory problem	**Ragsdale ch: 2, 8**	**HW4** Replicate the EOQ Model on p. 225; Do Ch8, pp. 235-236, #4.
5	22	F	Review HW4 Sensitivity analysis Patterns in LP solutions	**PB 8.6 and 9.5, 9.6, App. 9.1**	**HW5** Do Ch9, pp. 271-273, #7, 13.
6	25	M	Today's Class Times– 10:30am-12:30pm & 2-3pm Review HW5 Allocation (9.2), covering (9.3), and blending (9.4) problems	**PB 9**	**HW6** Do Ch9, pp. 271-273, #6, 12.
7	26	T	Review HW6 Facility location (8.5), revenue maximization (8.5), portfolio (8.7) problems	**PB 8**	**HW7** Read Retirement Planning case p. 463-464. Answer the case questions in a report to the client.
8	27	W	Review HW7 Transportation (10.2) and assignment (10.3) problems	**PB 10**	**Prepare for exam**
9	28	Th		**Exam 1**	

DECISION ANALYSIS AND SIMULATION

10	29	F	Decision analysis	**PB 13**	**HW8** Do Ch13, p. 381, # 10, 11.
11	Apr 1	M	Review Exam 1 Review HW8 Review probability distributions	**App. 3**	**HW9** Select partner and case study.
12	2	T	Monte Carlo simulation Review HW9	**PB 14**	**HW10** Do Ch14, pp. 429-431,#7, 13.
13	3	W	Review HW10 Monte Carlo simulation extended		**HW11** Do Ch14, pp. 429-431,#6, 12. Watch Oracle's webcast "The future of data and analytics"
14	4	Th	Guest Speaker: Kai Larsen, Professor of Information Management, University of Colorado, Boulder, Leeds School of Business Automated Machine Learning as a Business Process		
15	5	F	Optimization in Simulation	**PB 15**	**HW12** Do any problem of your choice from chapters 8-10.
16	8	M	Group Presentations, 10am-noon		
17	9	T	Exam review, 1-3pm		
18	10	W	**Exam 2,** 9:30am – 12:30pm		