Commerce 3QA3: Management Science for Business
Winter 2020 term
(preliminary) Course Outline

December 17, 2019

COURSE OBJECTIVE

Problem analysis and solution using Excel is an essential skill in business. In this course students learn how to use five tools in Excel (business problem modeling, linear programming, decision analysis, simulation, and waiting lines) to analyze and solve business problems in accounting, finance, human resources, marketing, and operations.

PREREQUISITES

Commerce 2QA3 and registration in any Commerce or Engineering and Management program; or one of Stats 2MB3, 3J04, 3N03 or 3Y03 and registration in any Engineering and Management program.

INSTRUCTOR AND COURSE INFORMATION

Section	C01 (12714), C02 (12715)	C03 (12716)
Class times, classroom	Online lectures; no classroom	MoWeTh 5:30-6:20, PGCLL B138

All lectures, practice problems, notes, software, instructions, podcasts, quizzes, and exams are identical for all sections. All sections use the same Avenue website. Students in sections C01 and C02 can complete the course entirely online; they can also attend any of the lectures for section C03. In past years there were always a large number of empty seats in the classroom. Students in section C03 can attend lectures or they can complete some or all of the course online.

Instructor	Teaching Assistants (TAs)
Dr. John Miltenburg, DSB-411 Email: miltenb@mcmaster.ca Telephone: (905) 525-9140 ext. 22014 Office hours: Wed. and Thu., 4:00 to 5:15, DSB-411	Office hours: Mon., Tue., Wed., Thu., Fri: 12 noon to 3:00 pm In-person at DSB-411 Possibly online using Zoom at: https://zoom.us/j/835884354

Questions concerning course material must be posted on the Avenue to Learn Discussion board. These questions must not be e-mailed to the instructor or the TAs; these e-mails will not be answered. Questions posted on the Avenue Discussion board can be answered by the instructor or the TAs or other students. **Questions concerning special arrangements for quizzes or exams, or absences from exams** must be discussed **in person** with the instructor or TAs during office hours; **this cannot be done by e-mail**.

COURSE ELEMENTS

Credit value:	3	Leadership:	Yes	IT skills:	Yes	Global view:	Yes
WebCT:	Yes	Ethics:	Yes	Numeracy:	Yes	Written skills:	No
Participation:	Yes	Innovation:	Yes	Group work:	No	Oral skills:	No
Evidence-based:	Yes	Experiential:	Yes	Final exam:	Yes	Guest speaker(s):	No

COURSE DESCRIPTION

The course will study five widely used quantitative management science tools (problem modeling, linear programming, decision analysis, simulation, and waiting lines) used in business decision problems when conditions are reasonably certain or somewhat uncertain. All five tools are implemented in Excel. The course is taught through lectures, computer work with Excel, lecture notes and textbook readings, practice problems, and online podcasts.

LEARNING OUTCOMES

Upon completion of this course, students will be able to complete the following:
- Create Excel models of business decision problems in accounting, finance, human resources, marketing, and operations.
- Formulate linear and integer decision problems. Use Excel to solve these problems, perform sensitivity analyses, and determine the marginal value of the resources used.
- Analyze business decision problems under uncertainty and risk using payoff tables and decision-tree models in Excel. Use utility functions to account for risk preferences.
- Use simulation and waiting line/queuing models in Excel to model and analyze business processes.

REQUIRED COURSE MATERIALS

Textbook: Balakrishnan, N., Render, B., and R. Stair, Managerial Decision Modeling with Spreadsheets, 3rd edition, Pearson/Prentice Hall (2013).

A textbook is **highly recommended but is not required**. There are three options:

(i) Custom textbook: There is a bounded custom textbook containing only the 8 chapters of the textbook that we study in this course. This bounded custom textbook is available in the bookstore for about $130.

(ii) e-book: An electronic book is available. This is the entire book (11 chapters). It is available from the bookstore for about $75.

(iii) Traditional textbook: A used textbook may be available from a student who took the course in a previous year.

Textbook website: The textbook website http://wps.prenhall.com/bp_balakrishnan_mdms_3/

Other textbooks: Other editions (e.g. the 2nd edition) of the textbook are not as useful. There is an international version of the 3rd edition. It is missing 'Chapter 4: Linear programming sensitivity analysis', which is a very important chapter in the course. Therefore this book is not as useful.

Course Avenue to Learn Website: http://avenue.mcmaster.ca

Software: 1. Excel: For PC's: Excel 2013, **2016** or **MS Office 365**. For Mac's: Excel **2016**, or **MS Office 365**.
2. Excel Solver add-in: Available in all Excel versions on PC's and Mac's.
(optional) Excel Data Analysis add-in: Available on all PC's and Mac's with Excel 2016 or MS Office 365.
3. TreePlan: Excel add-in for building and analyzing decision trees. Available on Avenue > Content
4. SimQuick: Excel add-in for building and analyzing simulation models. Available on Avenue > Content
5. Queuing Model templates: 4 Excel templates for analyzing queuing problems. Available on Avenue > Content

PC users: All software runs on a PC. Your MS Office should be up-to-date. Microsoft does this automatically.

Mac users: For MS Office 365 this is done automatically. For other versions of Excel you must **manually update Excel**. **If Excel is not completely up-to-date then the add-ins and templates may not work.**

Lectures, Podcasts, Schedule: Lecture notes are on Avenue. All lectures are available as podcasts on YouTube and are accessed through links on Avenue. Podcasts can be accessed at any time. The course schedule of lectures, podcasts, quizzes, and exams is shown at the end of the course outline. This schedule will be updated from time to time. The official, up-to-date course schedule will be an Excel file on Avenue > Content.

Practice Problems: There are no hand-in assignments. Practice Problems for self-study are assigned (see the course schedule on Avenue). Additional problems may be assigned during the course. All Practice Problems and solutions are posted on Avenue.

EVALUATION AND COURSE DELIVERABLES

	Marks	Tentative Dates and Times
Quizzes	10	5 on-line on-Avenue quizzes; Sun. 12 noon to Mon. 12 noon; see schedule below
Exam 1	28	on-line, on-Avenue; tentatively 3 hours long; 7:00pm to 10:00pm, Fri. Feb. 14
Exam 2	28	on-line, on-Avenue; tentatively 3 hours long; 7:00pm to 10:00pm, Fri. Mar. 27
Final Exam (Cumulative)	34	2 hours*; regular written exam; day and time to be scheduled by the university * there will be an additional one-hour computer exam for students who miss Exam 1 or Exam 2 with an MSAF (details follow below)
Total	**100**	

Quizzes: Five Quizzes help students keep up with their studies and prepare for the exams. At assigned times (see the course schedule on Avenue) when selected lectures, chapters in the textbook, and practice problems should be complete, students take a 25-minute**, 14-question (approximately), on-line on-Avenue Quiz. Students have 24-hour period (between 12 noon on Sunday and 12 noon on Monday) to start and finish a Quiz. Once a student starts a Quiz she has 25 minutes to finish. Quiz questions are randomly assigned and are based on the textbook, the lecture notes, the lectures, and the practice problems. Questions are descriptive and short calculations. There are practice questions for some quizzes on Avenue and at the textbook website. Each Quiz question is worth one mark, so each Quiz has 14 marks (approximately). However the maximum mark is 10 (approximately). Students who correctly answer 10 or more questions get 10 out of 10. Students, for example, who correctly answer 8 questions get 8 out of 10. Marks are posted on Avenue. Quizzes are not returned. Students can review their Quiz with a TA during office hours within two weeks of the quiz marks being posted on Avenue. If a student misses a Quiz or receives a mark of zero on a Quiz, then the two marks for the Quiz are automatically added to the Final Exam (no MSAF is needed for a missed Quiz). In the Quizzes (and on the Exam 1 and Exam 2 below) students cannot 'go back'. Only one question appears on the computer screen at a time; students must answer the question that appears and then save their answer; when students move to the next question they cannot return to a previous question to answer the question later, or to check their work, or to change their answer. This is done to discourage students from sharing answers.

**In previous years the quizzes were 20 minutes long; this year we will have 25 minutes to complete a quiz.

Exams: There are three exams (see the course schedule on Avenue). Exams 1 and 2 are on-line on-Avenue and can be done off-campus (e.g. at home) or on-campus (e.g. in a university library or computer lab in KTH, BSB, JHE, or in a library, etc.). A small number of computer labs are booked (see the course schedule on Avenue) for the exams, but no help will be available in these labs. Students must install the course software on their computer before the exam. The Final Exam is a regular written exam scheduled and managed by the university in the same way as most final exams in other university courses.

Exam 1 and Exam 2: Exam 1 and Exam 2 cover material in the first-half and second-half of the course. Exam 1 and Exam 2 can be completed off-campus (e.g. from home) or on-campus (e.g. in a university library or computer lab). Students must work individually, not in groups. Answers are checked carefully to make sure students work individually. Students can use their textbook, notes, computer, computer files, and calculator. Each exam has several parts: e.g. randomly assigned descriptive questions, randomly assigned calculation questions, randomly assigned Excel worksheet questions. Exam 1 and Exam 2 (like the five Quizzes above) are set up so that students cannot 'go back' to previous questions. This means students must answer the question when it appears on the computer screen; when students move to the next question they cannot return to a previous question to check their work or answer the question later. This is done to discourage students from sharing their answers. Students must use their own computer or a university computer in the library, computer lab, etc. Students must install the course software on their computer before the exam. A student's computer must have excellent internet access in order to quickly and easily access Avenue to download questions and data, and upload answers to Avenue Assignment dropboxes. If students have poor internet access at home, then they must write these exams on-campus. No extra time, help or marks will be given because of problems with computers, software, or internet access.

Final Exam: The Final Exam covers all the material in the course. The Final Exam is a regular written exam scheduled and managed by the university in the same way as final exams in most other university courses. Students can prepare and use a one-page, two-sided crib sheet during the Final Exam. The crib sheet must be handed in at the end of the Final Exam. There are no restrictions on what can be put on the crib sheet (e.g. typed, hand-written, tables, Excel screenshots, etc. are all okay). Students can use a McMaster standard calculator during the Final Exam. See the McMaster calculator policy.

Any student who misses Exam 1 or Exam 2 or both and has a valid MSAF (see p. 4 below) will (i) have the marks for the missed Exam(s) added to the Final Exam, and (ii) have an additional one hour computer exam covering the missed computer material from Exam 1 or Exam 2 or both. This computer exam will be completed under invigilation in a university computer lab. This computer exam will normally begin two hours before the regular Final Exam. Students have one hour to complete this part of the Final Exam and then a one break before the regular Final Exam begins.

Marks: Marks are posted on Avenue. Quizzes and Exams are not returned. Students who wish to review their Quiz or Exam questions, answers, marks, etc. must first review their Quiz or Exam with a TA during office hours. This must be done within two weeks of the marks being posted on Avenue. After this is done students can review their Quiz or Exam with the instructor during office hours.

Final Grades: At the end of the course, overall percentage grades are converted as follows to a letter grade.

Percentage	00-49	50-52	53-56	57-59	60-62	63-66	67-69	70-72	73-76	77-79	80-84	85-89	90-100
Letter Grade	F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A	A+

Communication and Feedback

1. Students who are uncomfortable directly approaching an instructor regarding a course concern may send a confidential email to the Operations Management Area Chair, Professor Hassini (hassini@mcmaster.ca) or the Associate Dean (adbusac@mcmaster.ca).
2. Students' e-mails to instructors or TAs must originate from their official McMaster University e-mail account. This protects the confidentiality of information and confirms the identity of the student. E-mails regarding course issues should NOT be sent to the Area Administrative Assistant.
3. If after speaking with the instructor students wish to have a course component (i.e. midterm exam) re-evaluated, then they should complete the following process.

- Complete the form at http://www.mcmaster.ca/policy/Students-AcademicStudies/Form_A.pdf
- The component must be worth 10% or more of the final grade in the course
- Students pay a fee of $50 in Gilmour Hall #209. The receipt is then brought to Student Experience - Academic Office (formerly the APO) in DSB 112.
- The Area Chair will seek out an independent adjudicator to re-grade the component.
- An adjustment to the grade for the component will be made if a grade change of three points or greater on the 12 point scale (equivalent to 10 marks out of 100) has been suggested by the adjudicator as assigned by the Area Chair
- If a grade change is made, the student fee will be refunded.

ACADEMIC INTEGRITY

Students are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university. It is the student's responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at www.mcmaster.ca/academicintegrity. The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

ONLINE COURSE COMPONENTS

In this course we will be using Avenue to Learn. Students should be aware that when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure, please discuss this with the course instructor.

MISSED EXAMS/QUIZZES

If a student misses a Quiz or receives a mark of zero on a Quiz, then the two marks for the Quiz are automatically added to the Final Exam (no MSAF is needed for a missed Quiz).

Students wishing to request relief from a regularly scheduled exam (i.e. Exam 1, Exam 2, Final Exam) must follow the policy and procedure on the DeGroote website at: http://ug.degroote.mcmaster.ca/forms-and-resources/missed-course-work-policy/
With respect to that policy:

1. There is no possibility of a "re-write" of Exam 1 and there is no possibility of a "re-write" of Exam 2.
2. The "weight" of Exam 1 and the "weight" of Exam 2 will be "redistributed" as follows.
   2a. The marks for Exam 1 or Exam 2 or both are added to the marks for the Final Exam, and
   2b. If the student misses Exam 1 or Exam 2 or both then the student's Final Exam will have an additional one hour computer exam covering the missed computer material from Exam 1 or Exam 2 or both. This computer exam will be completed under invigilation in a university computer lab. This computer exam will normally begin two hours before the regular Final Exam. Students have one hour to complete this part of the Final Exam and then a one break before the regular Final Exam begins.

   An up-to-date list of valid MSAF's for Exam 1 and for Exam 2 will be maintained at Avenue > News. Students who have requested relief should check this list in a timely manner. They should not e-mail the instructor.

There will be no exceptions to items 1, 2a, 2b.

STUDENT ACCESSIBILITY SERVICES

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca.
For further information, consult McMaster University's Policy for Academic Accommodation of Students with Disabilities: http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy https://multifaith.mcmaster.ca/riso . Students requiring a RISO accommodation should submit their request, including the dates/times needing to be accommodated and the courses which will be impacted, to their Faculty Office normally within 10 days of the beginning of term or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

Potential Modifications to the Course

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

Acknowledgement of Course Policies

Your enrolment in Commerce 3QA3 will be considered to be an implicit acknowledgement of the course policies outlined above, or of any other that may be announced during lecture and/or on Avenue to Learn. It is your responsibility to read this course outline, to familiarize yourself with the course policies and to act accordingly.

Lack of awareness of the course policies cannot be invoked at any point during this course for failure to meet them. It is your responsibility to ask for clarification on any policies that you do not understand.

Course Schedule

This is the preliminary course schedule. It is shown here for illustration only. The final, official schedule is an Excel file (where all the details are easy to see) which is posted at Avenue > Contents > Course outline, schedule. The final, official schedule gives the official dates for all quizzes, exams, lectures, problems, etc.

Commerce 3QA3 Course Schedule - Winter 2020

updated Dec. 14, 2019

Podcasts		Textbook Chapter and description of topic	Lecture/podcast number	Date lecture course C03	Date online course C01, C02	Lecture Notes pages	Textbook pages	Practice problems			
1a.Outline	33 min	Course outline, schedule	1a	Jan 6	Jan 6 -10	Course outline, schedule					
1b.Workflow	12 min	Course workflow	1b	Jan 6							
Lecture 1c,2	49 min	Ch 1, App B - Business models, Excel tutorial	1c	Jan 6		Ch 1 Notes pp. 1-5	Ch 1, all pages; Excel tutorial; Appendix B	Ch. 1: Disc. quest. 2,12; Prob. 22,23,24; Solve all these problems using Excel; Bill Pritchett Practice Problem and Product Mix Problem on pp. 16-17 of Lecture Notes; Solve using Excel	Quiz 1	Exam 1	Final Exam
			2	Jan 8							
Lecture 3	38 min		3	Jan 9		Ch 1 Notes pp. 5-9					
Lecture 4	32 min		4	Jan 13	Jan 14 - 17	Ch 1 Notes pp. 9-end					
Lecture 5	48 min	Ch 2 - LP model, graphical, computer	5	Jan 15		Ch 2 Notes pp. 1-3	Ch 2, pp. 19-31				
		Quiz 1 (lectures 1-5): Sun. Jan. 19, 12 noon to Mon. Jan. 20, 12 noon									
Lecture 6	45 min		6	Jan 16	Jan 14 - 17	Ch 2 Notes pp. 4-5	Ch 2, pp. 31-end	Ch. 2: Disc. quest. 3,4,10,11,12; Prob. 13, 17; Solve these problems using graphical method; Prob. 13,17,27,29,43; Solve these problems using Solver in Excel	Quiz 2		
Lecture 7	40 min		7	Jan 20	Jan 20 - 24	Ch 2 Notes pp. 6-10					
Lecture 8	35 min		8	Jan 22		Ch 2 Notes pp. 11-end					
Lecture 9	42 min	Ch 3,5 - Standard LP problems	9	Jan 23		Ch 3,5 Notes pp. 1-5	Ch 3, pp. 65,66,77-81,73-74	Ch. 3: Prob. 3,12,13; Solve these problems using Solver in Excel			
		Quiz 2 (lectures 6-9): Sun. Jan. 26, 12 noon to Mon. Jan. 27, 12 noon									
Lecture 10	37 min		10	Jan 27	Jan 27 - 31	Ch 3,5 Notes pp. 6-9	Ch 3, all except pp. 91-101; Ch 5, pp 165-168, 170-172	Ch. 3: Prob. 7,9,12,17,21; Ch. 5: Prob. 17; Solve these problems using Solver in Excel	Quiz 3		
Lecture 11	46 min		11	Jan 29		Ch 3,5 Notes pp. 10-end					
Lecture 12	37 min	Ch 4 - LP sensitivity	12	Jan 30		Ch 4 Notes pp. 1-5	Ch 4, pp. 119-133	Ch. 4: Disc. quest. 8; Prob. 13,21(except i),22,23; Solve these problems using Solver in Excel			
Lecture 13	39 min		13	Feb 3	Feb 3 - 7	Ch 4 Notes pp. 6-9					
Lecture 14	44 min		14	Feb 5		Ch 4 Notes pp. 10-16					
		Quiz 3 (lectures 10-14): Sun. Feb. 9, 12 noon to Mon. Feb. 10, 12 noon									
Lecture 15	37 min		15	Feb 6	Feb 3 - 7	Ch 4 Notes pp. 17-22	Ch 4, pp. 134-148	Ch. 4: Disc. quest. 6; Prob. 21(i) solve using Solver in Excel			
Lecture 16	36 min		16	Feb 10	Feb 10 - 14	Ch 4 Notes pp. 23-29					
Lecture 17	34 min	Ch 6 - Integer LP	17	Feb 12		Ch 6 Notes pp. 1-5	Ch 6, pp. 211-223	Ch. 6: Disc. quest. 3; Prob. 13,19,37; Solve these problems using Solver in Excel			
Lecture 18	26 min	Ch 8 - Decision analysis	18	Feb 13		Ch 8 Notes pp. 1-4	Ch 8, pp. 319-322				
		Exam 1 (lectures 1-17): Fri. Feb. 14, 7:00 pm - 10:00 pm (computer labs BSB 249, KTH B121, KTH B123 are booked from 6:00 to 10:00 but no help will be available in these labs)									
		Feb 17 to 23 - midterm break - no classes									
Lecture 19	22 min	Ch 8 - Decision analysis	19	Feb 24	Feb 24 - 28	Ch 8 Notes pp. 4-7	Ch 8, pp. 323-344	Ch. 8: Disc. quest. 4,5,7,8; Prob. 14,15,19,20; Solve all these problems manually and in Excel Ch. 8: Prob. 26,37,38; Also solve using TreePlan in Excel	Quiz 4		
Lecture 20+21	22+18 min		20+21	Feb 26		Ch 8 Notes pp. 8-10, 11-13					
Lecture 22	39 min		22	Feb 27		Ch 8 Notes pp. 14-18					
Lecture 23	36 min		23	Mar 2	Mar 2 - 6	Ch 8 Notes pp. 19-22, TreePlan					
Lecture 24	39 min		24	Mar 4		Ch 8 Notes pp. 23-26					
		Quiz 4 (lectures 18-24): Sun. Mar. 8, 12 noon to Mon. Mar. 9, 12 noon									
Lecture 25	49 min		25	Mar 5	Mar 2 - 6	Ch 8 Notes pp. 27-34	Ch 8, pp. 345-355	Ch. 8: Disc. quest. 11; Prob. 27,39; Solve these problems using TreePlan in Excel Prob 27 also solve in TreePlan using utility function: U(X)=1.0-1.0×exp(-X/25,000) Prob 39 also solve in TreePlan using utility function: U(X)=1.0-1.0×exp(-X/1,000)	Quiz 5		
Lecture 26	38 min		26	Mar 9	Mar 9 - 13	Ch 8 Notes pp. 35-40					
Lecture 27	34 min		27	Mar 11		Ch 8 Notes pp. 41-48					
Lecture 28	44 min	Ch 10 - Simulation	28	Mar 12		Ch 10 Notes pp. 1-5	Ch 10, pp. 407-427, 434-437	Ch 10: Prob. 18 (iv,v) as described on p. 11 of Lecture Notes Prob 23; Do N=200 replications			
Lecture 29	47 min		29	Mar 16	Mar 16 20	Ch 10 Notes pp. 6-11					
Lecture 30	40 min		30	Mar 18		Ch 10 Notes pp. 12-15					
		Quiz 5 (lectures 25-30): Sun. Mar. 22, 12 noon to Mon. Mar. 23, 12 noon									
Lecture 31	25 min		31	Mar 19	Mar 16 - 20	Ch 10 Notes pp. 16-19	Ch 10, all except pp. 443-452	Ch 10: Prob. 30; Do N=200 replications			
Lecture 32	27 min		32	Mar 23	Mar 23 -26	Ch 10 Notes pp. 20-24					
Lecture 33	21 min		33	Mar 25		Ch 10 Notes pp. 25-29	SimQuick	SimQuick: Exercise 1b as described on p. 35 of Lecture Notes			
Lecture 34	21 min		34	Mar 26		Ch 10 Notes pp. 30-35					
		Exam 2 (lectures 18-32): Fri. Mar. 27, 7:00 pm - 10:00 pm (computer labs BSB 249, KTH B121, KTH B123 are booked from 6:00 to 10:00 but no help will be available in these labs)									
Lecture 35	30 min	Ch 9 - Queuing	35	Mar 30		Ch 9 Notes pp. 1-6	Ch 9, pp. 367-398	Ch. 9: Disc. quest. 2,3,4; Prob. 13,22,23,27(use λ=100),28,29,30,33; Solve all these problems in Excel using the Queuing templates			
Lecture 36			36	Apr 1	Mar 30 - Apr 3	Ch 9 Notes pp. 1-6					
Lecture 37	30 min		37	Apr 2		Ch 9 Notes pp. 7-11					
Lecture 38	25 min		38	Apr 6	Apr 6	Ch 9 Notes pp. 12-end					
		Final Exam (lectures 1-38): Day and time will be set by the University -- ?? 2 hours									