Logistical challenges of large classes

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Goals and objectives

- To stimulate discussion on scaling of class sizes

- To provide ideas of how to handle larger classes

- To address, in particular, how to run exams

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Scaling

- Physical size scaling

- Repeatability / reproducibility / reliability

Larger classes

- Good record-keeping

- Get to know your students

- How to motivate engagement?

  - Marks?

- Dissemination of course material and class announcements

Exam security

- What could go wrong?
- Why is security necessary?
  - Avoid trouble
  - Preventative measures, not reactive ones
- How to do it?
  - Exam preparation
  - Running the exam itself

Exam nightmares

Active learning (think-pair-share):

1. On your own, list "exam nightmare" scenarios.

2. With one or two neighbours, compare your lists.

3. Afterwards, we'll share amongst whole group.

Why exam security?

- Some of the nightmare scenarios have no good *ex post facto* solution

- Focus instead on preventative measures

- Protects students and instructors

- Safeguard academic integrity

- Exam security is not that difficult!

A range of solutions

- I present various ideas
- Select and adapt as appropriate
- Effort to implement vs. your needs
- Considerations, *e.g.*:
  - number of students
  - exam format
  - exam location

Cheating on exams

- Types of cheating:
  - opportunistic (not planned)
  - planned with malicious intent
  - accidental!
- Security measures:
  - remove temptations to cheat
  - remove fear of being copied
  - make cheating impractical, risky, and pointless

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Exam prep — Preliminary steps

- Check out exam room and draw a map:
  - seats/furniture
  - lighting, sightlines
- Create a seating map: where to put exams
- Arrange one or more TAs to help with exam

Exam prep — Multiple versions

- In large classes, depending on seating density, multiple exam versions should be considered.

- Version differences:
  - Change the numbers
  - Change the layout of the exam
  - Change the order of questions
  - Totally different questions

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Exam prep — Preparing the exam copies

- Different colour cover pages.
  - easy to do with the photocopiers we have ("cover sheet" function)
- All exams are numbered, per exam map
- Make one or two extras

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Exam prep — The exam kit

- Exams + spare copies

- Answer key?

- Exam map/seating plan

- Attendance list + clipboard

- Stapler

- Extra calculator

- Kleenex

- Slideshow with exam instructions

Exam map example

Attendance list example

Exam	ID	Lastname	Firstname	Exam	ID	Lastname	Firstname
	1234567	Doe	John				
	1010101	Stooge	Larry				
	4265050	Stooge	Curly				
	4925555	Stooge	Moe				

Exam set-up

- Clear out exam room during setup. Do not admit students until exam setup complete.

- Lay out exams per seating plan. Move furniture as needed.

- Formula sheets, scrap paper?

- Clear away garbage

- Prepare computer, projector, exam instruction slides, exam timer.

Exam start

- Admit students into room, get them settled in.

- Tell them to read front cover, fill out name, ID number, signature; count pages.

- ID card on desk.

- When ready, everyone starts at once.

- http://clock.jsit.ca

During the exam

- Get TAs to take attendance. He/she goes around with attendance sheet and simply records exam numbers based on supplied exam map and ID cards.

- You are free to answer questions about the exam.

- Never leave the room.

- You and TAs observe the class.

- Washroom policies

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End of the exam

- When time runs out, signal students to stop writing immediately. Be absolutely strict.

- Get TAs to help collect exams from the students in the room. Do not allow a rush of students to approach you to hand in exams.

- Avoid: lost exams, claims of "lost" exams, last minute cheating

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It's all about good record-keeping

- I know
  - precise location of all exams
  - who sat where
  - who was there; who was absent
- Students know that:
  - they are being watched
  - they are being taken of

Exam marking

- Exam storage before, during, and after marking.
- Marking by you personally, together with TAs, done exclusively by TAs?

Exam results

- Do you return exams?

- Do you release old exams as practise?

- How do you store old exams?

- Re-marking of exams? A whole new realm of security concerns, *e.g.*:

    - record marks for all parts of all questions.

    - strike out blank areas

    - scan/photocopy exams

Exam results example

Winter 2012 — E E 351 LEC B1 — Midterm Exam #2 results 2012/03/16

Exam #: 0   ID: #N/A   #N/A   #N/A

Prob.	Parts	Type	"Theory" score	out of	"Practical" score	out of	class avg	Total score	out of	class avg	std dev			
1	a	draw			#N/A	2	1.6							
	b	calc			#N/A	2	1.7							
	c	calc			#N/A	3	2.1	#N/A	11	7.9	2.4			
	d	procedure	#N/A	2			1.3							
	e	explain	#N/A	2			1.2							
2	a	calc			#N/A	2	1.6							
	b	draw			#N/A	4	3.3	#N/A	10	7.7	1.7			
	c	explain	#N/A	4			2.8							
3	a	explain	#N/A	3			1.0							
	b	draw			#N/A	2	1.9							
	c	calc			#N/A	2	1.2	#N/A	16	7.5	2.9			
	d	calc			#N/A	4	1.9							
	e	calc			#N/A	5	1.5							
4	a	draw			#N/A	2	1.7							
	b	explain	#N/A	2			1.5							
	c	explain	#N/A	2			1.0	#N/A	12	7.5	3.0			
	d	explain	#N/A	3			1.3							
	e	calc			#N/A	3	2.0							
Totals			#N/A	18	#N/A	31		#N/A		Formula sheet				
								#N/A	50	31.7	7.0		16	49

#N/A	#N/A	class avg	10.2		20.5			your mark		avg	std dev		min	max
#N/A	#N/A	std dev	3.8		4.3			**#N/A**		63.3%	13.9%		32%	98%

	mark	out of	%	rank	out of		avg	std dev		min	max
Attendance	#N/A	50	#N/A	#N/A	112	Midterm Exam #1	31.1	9.1		1	47
#N/A	#N/A	50	#N/A	**#N/A**	111	Midterm Exam #2	31.7	7.0		16	49
up to Midterm #2	#N/A	50.0	#N/A	#N/A	107	Aggregate	31.7	7.1		13.0	46.5

Because you did not take both midterm exams, you will have to make a decision about whether or not to continue in the course with less information than those students who did write both midterm exams.

Exam results example

								#N/A	50	31.7	7.0		16	49
#N/A	#N/A	class avg		10.2		20.5		your mark		avg	std dev		min	max
#N/A	#N/A	std dev		3.8		4.3		#N/A		63.3%	13.9%		32%	98%

	mark	out of	%	rank	out of		avg	std dev		min	max
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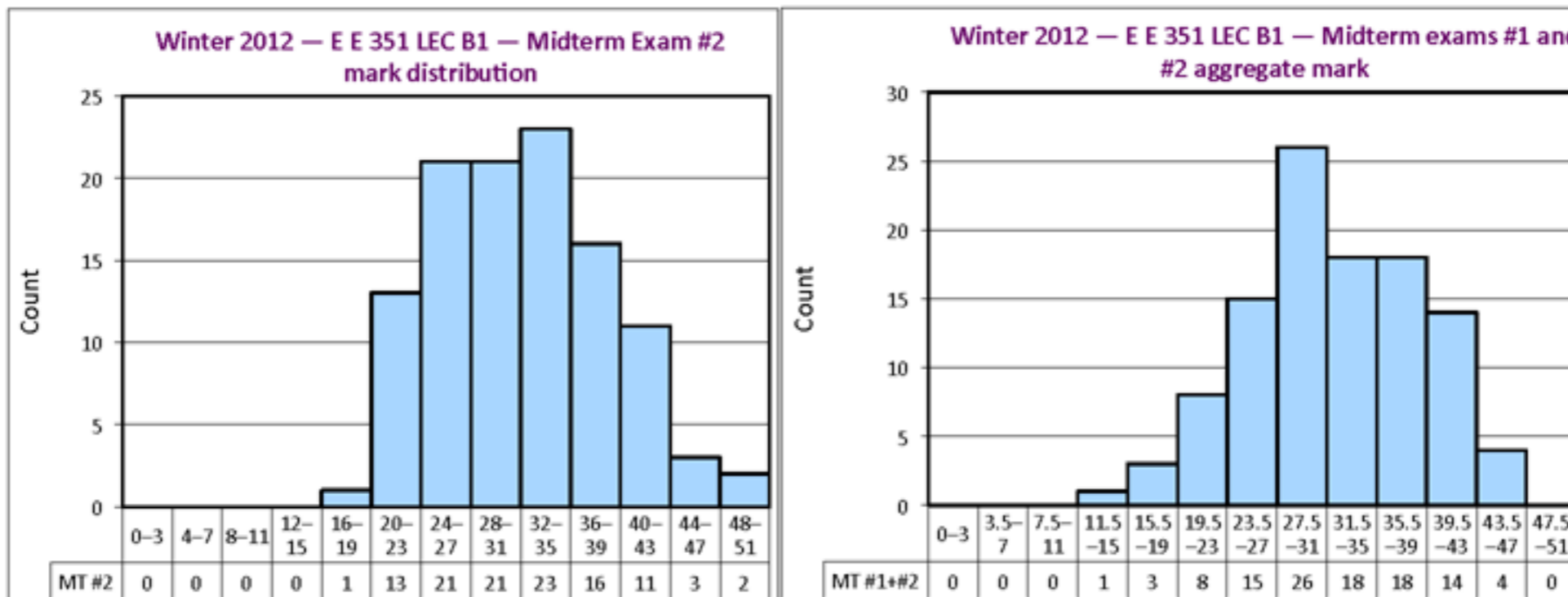
An overall course mark of at least 60% and an aggregate mark of at least 55% on the exams is required for a grade of C (2.0) or above. All students must complete and pass the lab to earn a passing grade in the course.

Winter 2012 — E E 351 LEC B1 — Midterm Exam #2 mark distribution

MT #2	0–3	4–7	8–11	12–15	16–19	20–23	24–27	28–31	32–35	36–39	40–43	44–47	48–51
	0	0	0	0	1	13	21	21	23	16	11	3	2

Winter 2012 — E E 351 LEC B1 — Midterm exams #1 and #2 aggregate mark

MT #1+#2	0–3	3.5–7	7.5–11	11.5–15	15.5–19	19.5–23	23.5–27	27.5–31	31.5–35	35.5–39	39.5–43	43.5–47	47.5–51
	0	0	0	1	3	8	15	26	18	18	14	4	0

I have a cheating case ... now what?

- Be familiar with the procedure

- Follow the procedure

- If you're not sure, keep good records, and ask for advice.

- Resource people: Associate Chair, Associate Dean

Conclusions

- Security needs a proactive approach
- Straightforward, but effective measures
- A lax attitude toward security tells students that you are not serious about it

Colophon

- Presented August 15, 2012 at the University of Alberta Centre for Teaching and Learning's symposium on large classes, "Teaching Big: The Joy of Large Classes"

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Abstract

The steadily increasing demand for post-secondary education, coupled with a drive toward consolidation to leverage economies of scale, means growing class sizes and the accompanying challenges — a solution that works for a small class no longer works when the class size is scaled up. Some of these challenges relate to delivery of the course material and assessment of student learning. This presentation, however, will focus on some of the logistical challenges of large classes, and discuss some ideas and methods that might be helpful for handling the day-to-day operations involved in teaching a large class. How do we as instructors get students engaged (interested and participating) and avoid the tempting path of anonymity? The answer, perhaps, is to get to know our students and show them that they are not just a number. Of particular interest are the logistics surrounding examinations. How do we ensure that the exam runs smoothly? What if there are problems? How would these be handled? I will present a suite of tools and ideas that form a complete framework for exam logistics and security, one which, most importantly, scales smoothly with class size, no matter how large the class ... or how small.