Maths Courses Statistics: PRE SEB DATA! (May 29, 2008)

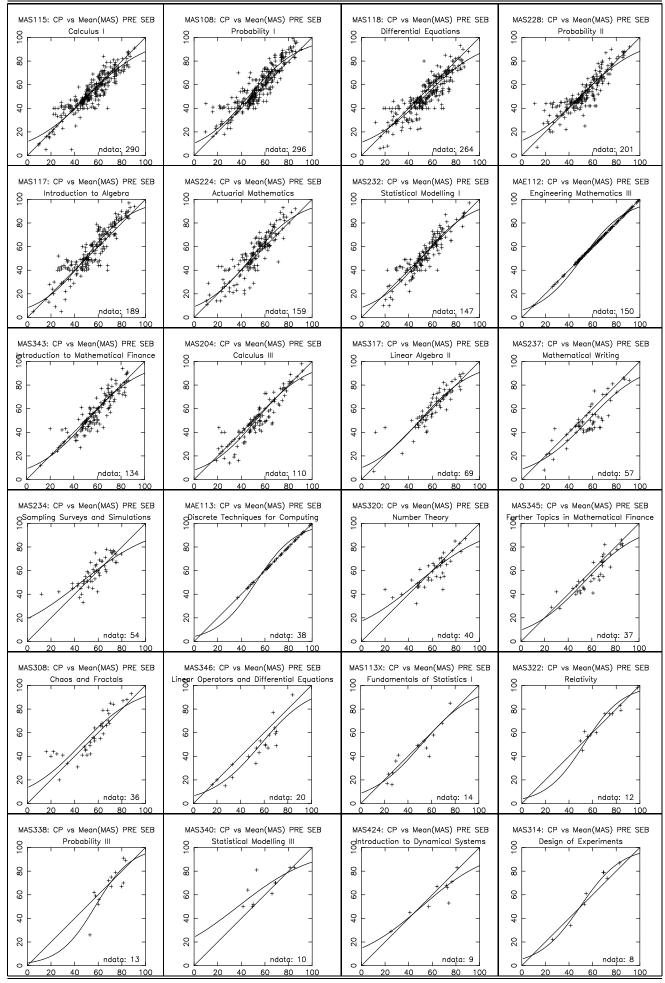| Code	Title	Num Reg	Num Invis	Mean Mark	Boundaries Target	Boundaries Internal	Fail (%)	Exp mark (av:40)	Grade A (%)	Exp mark (av:70)
MAS115	Calculus I	335	24	52.46	[30,70]	[20,60]	11.25	39.47	15.76	68.33
MAS108	Probability I	334	18	56.32	[30,70]	[30,70]	9.18	42.85	24.37	75.41
MAS118	Differential Equations	289	14	50.52	[30,70]	[30,70]	17.82	37.41	14.91	65.94
MAS228	Probability II	226	13	51.95	[30,70]	[30,70]	13.62	40.93	13.15	69.37
MAS117	Introduction to Algebra	206	10	55.54	[30,70]	[30,70]	11.22	39.35	29.08	74.38
MAS224	Actuarial Mathematics	193	20	51.97	[30,70]	[29,63]	16.76	40.49	15.61	74.23
MAS232	Statistical Modelling I	174	16	51.34	[30,70]	[20,60]	16.46	37.66	14.56	71.53
MAE112	Engineering Mathematics III	164	1	59.94	[30,70]	[30,76]	5.52	35.67	26.38	73.67
MAS343	Introduction to Mathematical Finance	146	6	56.39	[30,70]	[30,70]	12.14	37.46	25.71	69.66
MAS204	Calculus III	139	12	49.12	[30,70]	[30,70]	22.05	36.02	14.96	69.78
MAS317	Linear Algebra II	74	2	59.96	[30,70]	[30,70]	5.56	39.67	30.56	71.47
MAS237	Mathematical Writing	64	1	48.84	[30,70]	[30,70]	12.70	33.81	14.29	64.26
MAS234	Sampling Surveys and Simulations	56	2	58.04	[30,70]	[30,70]	3.70	45.75	18.52	68.56
MAE113	Discrete Techniques for Computing	47	4	66.47	[30,70]	[30,70]	2.33	32.28	44.19	74.35
MAS320	Number Theory	42	0	58.67	[30,70]	[30,70]	4.76	43.44	19.05	67.37
MAS345	Further Topics in Mathematical Finance	38	1	57.41	[30,70]	[30,70]	5.41	36.44	24.32	66.97
MAS308	Chaos and Fractals	37	1	57.67	[30,70]	[27,70]	8.33	44.50	25.00	73.47
MAS346	Linear Operators and Differential Equations	21	1	46.45	[30,70]	[30,70]	30.00	31.11	10.00	64.95
MAS113X	Fundamentals of Statistics I	15	1	43.57	[30,70]	[30,70]	35.71	37.21	7.14	70.17
MAS322	Relativity	15	2	66.31	[30,70]	[30,70]	0.00	31.52	46.15	74.39
MAS338	Probability III	15	1	64.64	[30,70]	[30,70]	7.14	24.31	42.86	69.71
MAS340	Statistical Modelling III	10	0	66.40	[30,70]	[30,70]	0.00	52.21	50.00	73.54
MAS424	Introduction to Dynamical Systems	9	0	59.11	[30,70]	[30,70]	11.11	40.63	22.22	65.88
MAS314	Design of Experiments	8	0	61.00	[30,70]	[30,70]	25.00	36.61	50.00	76.50
MAS233	Logic I: Mathematical Writing	7	2	38.80	[30,70]	[30,70]	60.00	-	20.00	-
MAS412	Relativity and Gravitation	6	1	87.00	[30,70]	[30,70]	0.00	85.13	100.00	90.09
MAS329	Topology	5	1	50.50	[30,70]	[30,70]	0.00	39.08	25.00	59.92
MAS408	Graphs Colourings and Design	5	0	50.00	[30,70]	[25,65]	20.00	26.74	20.00	57.56
MAS316	Galois Theory	3	0	71.00	[30,70]	[30,70]	0.00	25.83	66.67	64.05
MAS402	Astrophysical Fluid Dynamics	2	0	84.50	[30,70]	[30,70]	0.00	27.70	100.00	75.17
MAS420	Topics in Probability and Stochastic Processes	2	0	68.50	[30,70]	[30,70]	0.00	100.49	50.00	84.56
MAS428	Group Theory	2	0	65.00	[30,70]	[30,70]	0.00	46.64	50.00	82.00
MAS442	Bayesian Statistics	2	0	44.00	[30,70]	[30,70]	50.00	32.92	0.00	62.68
MAS202	Algorithmic Mathematics	1	1	nan	[30,70]	[30,70]	0.00	-	0.00	-
MAS214	Linear Operators and Differential Equations	1	1	nan	[30,70]	[30,70]	0.00	-	0.00	-
MAS222	Games and Linear Programming	1	1	nan	[30,70]	[30,70]	0.00	-	0.00	-
MAS344	Computational Statistics	1	0	40.00	[30,70]	[30,70]	0.00	-	0.00	-
MAS415	Stellar Structure and Evolution	1	0	57.00	[40,70]	[30,70]	0.00	-	0.00	-
MAS426	Algebraic Topology	1	0	73.00	[30,70]	[30,70]	0.00	-	100.00	-

Explanatory Notes

Column	Explanation
Num Reg	Total number of candidates registered for exam, irrespective of exam mode.
Num Invis	Number of "invisible" students: If the college point of a candidate in an examination is less than some threshold (currently 5). If a candidate is absent from the exam, then they have 0F, and classified "invisible."
Mean Mark	Mean College Point score of visible students on this course.
Boundaries	The Target and Internal E and A grade boundaries, taken from the TGB and IGB records in the Maths exam files. The IGB boundaries are used for linear piece-wise interpolation of marks to the College boundaries (which are 40E-70A).
Fail % Fail: Exp mark	The percentage of visible candidates on the course who fail. The expected mark on this course, according to a model fit, of a candidate who has scored an average of 40 over all their courses. The model fit is given below
Grade A % Grade A: Exp mark	The percentage of visible candidates on the course who gain grade A. The expected mark on this course, according to a model fit, of a candidate who has scored an average of 70 over all their courses. The model fit is given below

Description of Model Fit

• For each course i the data set of candidate marks $\{y_{ij}, x_j\}$ can be accumulated, where y_{ij} is the mark obtained by candidate j on course i, and x_j is the mean mark of candidate j over all the courses taken by them this year (excluding courses where the mark is less than some threshold, currently 5). Only candidates for whom an overall mean can be calculated are included.

• The plots show all the points in $\{y_{ij}, x_j\}$ as crosses. If candidates were to score the same as their overall mean, then the data points would lie on the plotted straight line.

• The data set $\{y_{ij}, x_j\}$ for each course is fitted to an S-shaped function: $Y_i(x) = 100.5e^{(a_i+b_i x)}/(1 + e^{(a_i+b_i x)})$ where a_i and b_i are the parameters of the fit. The function is chosen so as not to exaggerate deficiencies of the fit near the end points of the range $[0, 100]$.

• The "Expected mark" is the value of the fitted function at some particular value of the overall candidate mean. So, the "expected fail" mark is $Y_i(40)$, and the "expected grade A" mark is $Y_i(70)$.

• The model fit is also plotted. Note that the fit is not constrained to have a positive slope. The fit is linear, so a minimum of two data points is required.

Maths Courses Statistics: PRE SEB DATA! (May 29, 2008)

MAS115: CP vs Mean(MAS) PRE SEB
Calculus I
ndata: 290

MAS108: CP vs Mean(MAS) PRE SEB
Probability I
ndata: 296

MAS118: CP vs Mean(MAS) PRE SEB
Differential Equations
ndata: 264

MAS228: CP vs Mean(MAS) PRE SEB
Probability II
ndata: 201

MAS117: CP vs Mean(MAS) PRE SEB
Introduction to Algebra
ndata: 189

MAS224: CP vs Mean(MAS) PRE SEB
Actuarial Mathematics
ndata: 159

MAS232: CP vs Mean(MAS) PRE SEB
Statistical Modelling I
ndata: 147

MAE112: CP vs Mean(MAS) PRE SEB
Engineering Mathematics III
ndata: 150

MAS343: CP vs Mean(MAS) PRE SEB
Introduction to Mathematical Finance
ndata: 134

MAS204: CP vs Mean(MAS) PRE SEB
Calculus III
ndata: 110

MAS317: CP vs Mean(MAS) PRE SEB
Linear Algebra II
ndata: 69

MAS237: CP vs Mean(MAS) PRE SEB
Mathematical Writing
ndata: 57

MAS234: CP vs Mean(MAS) PRE SEB
Sampling Surveys and Simulations
ndata: 54

MAE113: CP vs Mean(MAS) PRE SEB
Discrete Techniques for Computing
ndata: 38

MAS320: CP vs Mean(MAS) PRE SEB
Number Theory
ndata: 40

MAS345: CP vs Mean(MAS) PRE SEB
Further Topics in Mathematical Finance
ndata: 37

MAS308: CP vs Mean(MAS) PRE SEB
Chaos and Fractals
ndata: 36

MAS346: CP vs Mean(MAS) PRE SEB
Linear Operators and Differential Equations
ndata: 20

MAS113X: CP vs Mean(MAS) PRE SEB
Fundamentals of Statistics I
ndata: 14

MAS322: CP vs Mean(MAS) PRE SEB
Relativity
ndata: 12

MAS338: CP vs Mean(MAS) PRE SEB
Probability III
ndata: 13

MAS340: CP vs Mean(MAS) PRE SEB
Statistical Modelling III
ndata: 10

MAS424: CP vs Mean(MAS) PRE SEB
Introduction to Dynamical Systems
ndata: 9

MAS314: CP vs Mean(MAS) PRE SEB
Design of Experiments
ndata: 8

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MAS233: CP vs Mean(MAS) PRE SEB
Logic I: Mathematical Writing
ndata: 1

MAS412: CP vs Mean(MAS) PRE SEB
Relativity and Gravitation
ndata: 5

MAS329: CP vs Mean(MAS) PRE SEB
Topology
ndata: 4

MAS408: CP vs Mean(MAS) PRE SEB
Graphs Colourings and Design
ndata: 5

MAS316: CP vs Mean(MAS) PRE SEB
Galois Theory
ndata: 3

MAS402: CP vs Mean(MAS) PRE SEB
Astrophysical Fluid Dynamics
ndata: 2

MAS420: CP vs Mean(MAS) PRE SEB
Topics in Probability and Stochastic Processes
ndata: 2

MAS428: CP vs Mean(MAS) PRE SEB
Group Theory
ndata: 2

MAS442: CP vs Mean(MAS) PRE SEB
Bayesian Statistics
ndata: 2

MAS415: CP vs Mean(MAS) PRE SEB
Stellar Structure and Evolution
ndata: 1

MAS426: CP vs Mean(MAS) PRE SEB
Algebraic Topology
ndata: 1