

# HE Mathematics Representative report:

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## Background on the IB at Durham

For a student wishing to take a degree in the Department of Mathematical Sciences at the University of Durham we currently offer a tariff of 340 (AAB with an A in Mathematics). For a student taking the IB we ask for 32 points overall where we stipulate that the student must achieve a grade H6, this is in good agreement with the QCA study which concluded that grade A of a GCE A level is aligned with H7, although in light of the second Table below we may reconsider. In practice students entering Durham obtain near to the tariff of 345 and two-thirds enter with two modules in Mathematics.

To get a feeling of IB students I spoke to four science admissions secretaries in Durham:

1. Natural Sciences: students with an IB qualification (typically 3-4 per year) bring a wider base to the student population and a little more confidence than a typical Durham student.
2. Physics: We have heard that an H6 is roughly equivalent to a low grade A at A-level and an H7 to a good grade A.
3. Mathematics: IB students with Standard level would find a Mathematics degree challenging.
4. Engineering: IB students taking Mathematical Methods (SL) are required to do the Further Calculus option.

I also spoke to the Principal of one of the Durham Colleges who, while did not have experience of students' Mathematical abilities/problems, in general terms he praised the IB students' maturity and well-rounded personality. However, he was quick to point out that this may not have been down simply to the IB but also to students' background or personal circumstance.

Only a few IB students have undertaken a Durham Maths degree in recent years, even though we make many offers. Given that Mathematics is the language of science I decide to widen this report to include Departments/students stipulating a Mathematics entry requirement and where Mathematics is taught as a service course in the first year:

Degree	IB	Points	A-level	IB	Maths grade	A-level
Mathematics	32		340	H6		A
Engineering	32		320	H5		B
Physics	38		340	H7		B
Natural Sciences	36		360	H6		A

## Student achievement

For the October 2002 in-take I made a survey of the English A-level modules which Core A and MES students had taken, I received 236 responses. The tables show the results:

	P1	P2	P3	P4	P5	P6	P7	S1	S2	S3	S4	S5	S6
AQA	36	36	32	25	22	16	5	29	10	2	1	1	2
Edexcel	90	90	85	43	39	29	0	80	52	13	0	0	0
OCR	92	92	92	54	39	26	0	88	58	29	6	3	2

	M1	M2	M3	M4	M5	M6	D1	D2
AQA	32	19	4	8	4	3	12	4
Edexcel	89	72	40	12	4	3	32	7
OCR	89	78	49	14	2	3	36	6

The following table lists the total number of students taking popular combinations:

	AQA	Edexcel	OCR
P1, P2, P3, S1, S2 and M1	10	50	55
P1, P2, P3, S1, M1 and M2	14	61	73
P1, P2, P3, P4, S1 and S2	10	35	52
P1, P2, P3, S1, S2, M1 and M2	5	36	48
P1, P2, P3, P4, S1, S2 and M1	9	35	48

The table below lists some key facts about some modules mentioned below:

Module	A-level prerequisite	Module A-level Grade split	Average module mark	Fraction of failures
Core A	A	A	64%	14/226
Core B	A	A	66%	20/212
SMA	C or better	A(151) B(33) C(0)	70%	9/224
SMB	C or better	A(131) B(23) C(0)	69%	10/186
MES	C or better	A(106) B(39) C(8)	73%	9/168
Fndtn	GCSE grade C or better		68%	3/27

And their syllabuses are attached as Annex A.

The following table lists students' IB Mathematics qualification (this does include any tariff for ToK/EE/CaS) and their Mathematics results at the end of their first-year:

Id	Degree	IB Qual	Year	Module Result
#1	Mathematics	H7 38	2002	Core A 66%, Core B 64%
#2	Mathematics	H7 38	2002	Core A 85%, Core B 78%
#3	Physics	H7 40	1999	Core A 82%, SMB 95%
#4	Physics	H7 39	2003	SMA 96%, SMB 97%
#5	Physics	H6 32	2002	SMA 39%, SMB 45%
#6	Philosophy	H5 35	1998	SMA 60%, SMB 71%
#7	Physics	H5 34	2002	SMA 40%, SMB 44%
#8	Natural Sciences	S5 37	2003	SMA 56%, SMB 51%
#9	Engineering	H7 39	2003	MES 96%
#10	Engineering	H6 32	2002	MES 78%
#11	Engineering	H6 37	1999	MES 72%
#12	Engineering	H6 37	2002	MES 59%
#13	Engineering	H?	1998	MES 68%
#14	Engineering	H5 31	2003	MES 84%
#15	Engineering	H5 32	1998	MES 58%
#16	Engineering	S6 29	2003	MES 31%
#17	Biology	S7 39	2001	Fndtn 68%

On paper the student cohort would appear to be reasonably homogeneous, so the "European diagnostic test" (see Annex B) was taken by Core A and MES students in 2003 and the cohort scored as follows:

Mathematics: 67% (119 students), Natural Sciences: 61% (105 students), Engineering 56% (148 students).

Specifically #9 scored 13/14, #14 scored 9/14 and #16 scored 4/14 on the diagnostic test.