

TR/02/88

July 1988

A MARKETING STUDY OF CERTAIN
MATHEMATICS-BASED UNDERGRADUATE
COURSES AT BRUNEL UNIVERSITY

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1. Introduction

This Report presents some results of a limited study of the marketing situation of certain mathematics-based undergraduate courses at Brunel University.

Several official and unofficial projections of student numbers in higher education have been made, trying to take account of the "demographic drop" - the decline of about one-third in the number of 18-year-olds in the population from a peak in the mid-1980 's to a trough in the mid-1990's. There has been much controversy over these projections (on serious statistical grounds, not just as pure polemic) - see Royal Statistical Society (1985) for a good review. For the latest projections, see DES (1986) and Secretaries of State (1987).

The situation can only briefly be described as highly confused. Projections range from a major decline to a modest increase, depending on fairly arbitrary assumptions about differential take-up rates of higher education in different social classes, different geographical areas and between males and females. What is clear is that, if student numbers are to be maintained or increased, a higher proportion will have to come from sectors of the population where the propensity to participate in higher education is currently comparatively low.

It has also to be borne in mind that there are modes of entry to higher education other than at about age 18 - for instance as a "mature student", or under the expanding category of "continuing education". Very little seems to be known regarding projections of

these numbers. Neither is there much serious quantitative information concerning potential numbers of overseas students, who have been largely excluded from all the projections.

Major changes are under way in the school examination system. The GCSE examination really is different from the former O levels, and it is trite to sum up the differences as merely "lower and broader". This must eventually have some effect on A levels, in terms of style and almost certainly of syllabus content. Also, AS levels will be taken for the first time in 1989. Inevitably universities will have to take a new look at admissions procedures and the structure of courses. Part, but only part, of this activity is subsumed under the heading of "access".

The background, then, is one of demographic uncertainty and of major change in the pre-university examination system. Against this background, and although there is a wealth of "perceived wisdom" and "anecdotal evidence", universities have virtually no serious quantitative marketing information as to what students actually want to study and why (or, indeed, as to what are the real requirements of the employers of the graduates). This study is merely a first step in that direction.

2. Secondary data

A prime source of secondary data consists of the Annual Reports of UCCA. Some relevant national data are given in Appendix A, which also gives data on the fortunes of Brunel University's mathematics-based courses (source: Brunel University Senate Papers). The appendix also comments on the surprisingly poor detailed quality of

the data, caused mainly by difficulties in setting up wholly consistent definitions of categories. Nevertheless, the data are adequate for describing the main features. A summary graphical display of the data is included in the Appendix.

Total numbers of applicants, for all courses at all universities, rose inexorably from the mid-1970's, reaching a high plateau in the early-1980's; but note that the 1986 figure (the most recent available when this report was prepared) was slightly lower. Total numbers admitted managed to creep up during the 1970's; there was a sharp drop in the hostile financial climate of the early 1980's, but at least a short-term rise thereafter.

The next section of secondary data concerns applicants for and admissions to mathematics-based courses, at all universities. There is a major discontinuity in data definition between 1977 and 1978; from 1978 onwards the data do not cover Computer Science courses, whereas previously such courses were included in the mathematics figures. It should also be noted that these data do not cover the areas of Mathematical Studies with Education ("Maths/Ed") or of Mathematical and Management Studies ("MMS"), both of which are important to Brunel; UCCA tabulates data for such courses under headings of "joint courses" that are too broad to be useful here.

The situation regarding nation-wide numbers of applicants for mathematics-based courses is alarming. There was a heavy decline in the early-to-mid 1970's (and remember that the figures then included Computer Science, which was presumably a young growing discipline). However, a strong rise followed until 1982 (one wonders why; and laments the apparent absence of any serious research to find out).

But it would seem now to be a case of headlong fall. The nationwide numbers admitted to mathematics-based courses have shown less volatility, though again the 1986 figure looks like a herald of decline.

The comparative success of Brunel is perhaps best appreciated from the graphical display in the appendix. Direct comparison is made a little difficult because Brunel's data never include any Computer Science courses (recall that the nation-wide data do until 1977) and because, as explained above, the nation-wide data do not cover Maths/Ed or MMS. Nevertheless, it can be clearly seen that Brunel applicants held up well through the lean years of the 1970's; had a relatively even bigger boom to 1982; and have declined less rapidly since then, even enjoying a slight rise in 1987. The numbers admitted at Brunel seem also to have shown a satisfactory long-term rising trend (indeed, the sharp dip in 1981 and 1982 was due to constraints tightly imposed by the University authorities, not to any weakness in the market).

The data on Brunel individual courses add fascinating detail. These data are displayed, albeit in a somewhat crowded form, in the last graph of the appendix. The Maths course seems to be plodding along in a fairly satisfactory way without in any sense being a market leader. The Maths/Man, Stats/Maths and Stats/Comp courses have likewise been fairly stable, at progressively lower levels. The Applied Mathematics with Computation course ("AMC") has, however, been exceedingly feeble. Maths/Ed, after a slow start, began to show real growth, but was summarily abandoned in 1984. Maths/Comp was a tremendous success story in the late-1970's, but would appear now to have served its purpose and be well past its peak and into decline.

In the early/mid-1980' s, MMS has led the way, but with some signs that even this strong growth may be levelling out. The most disturbing feature, however, is what happens next; where is the development to replenish the situation?

3. Questionnaire surveys

Analysis of secondary data provides only a passive review. To obtain first-hand information on student perceptions and aspirations, the author conducted two questionnaire surveys during 1987.

One of these surveys, hereafter called the "student survey", dealt with all current students on the MMS, Stats/Maths and Stats/Comp courses. The other, the "candidate survey", was conducted among 100 applicants for admission to these courses, deliberately including many who had declined a conditonal offer of a place at Brunel.

52 out of 81 students responded to the questionnaire. This was a slightly disappointing response rate, probably mainly accounted for by the time of year (March, i.e. exam time) when the exercise was carried out. This questionnaire was very open-ended and wide-ranging. It served partly as a piloting exercise for a more structured questionnaire for the candidates. No fewer than 74 candidates responded - a high response rate for a postal survey.

The analyses reported here cover only some of the more immediately important questions in the surveys.

3.1 Academic Reasons for Course Choice

Both surveys opened with a free-answer question seeking the respondents' main academic reasons for choosing their particular courses at Brunel. Most respondents gave more than one reason, and each survey produced a substantial list of responses; but the replies were dominated by a few key responses.

Table 3.1.1. MMS course - numbers (percentages) of respondents

<u>who mentioned certain key factors</u>	student survey	candidate survey
Good at maths, or maths is favourite subject	19(49%)	22(39%)
Wanted maths-based course but (i) not "straight maths", (ii) combination with useful other subjects	26(67%)	28(49%)
Course (or, explicitly, management subjects) expected to be useful for career	15(38%)	30(53%)
Management subjects expected to be interesting	11(28%)	9(16%)
[total number of respondents]	[39]	[57]

The detailed variations between the cells in this table may well be partly due to respondents expressing their ideas in slightly different ways, but the overall message is clear: students attracted to MMS regard themselves as mathematicians but want to combine their mathematics with other useful/interesting/career-oriented subjects.

As well as the responses summarised in the table, there was a long "tail" of other responses mentioned less frequently. Among the more interesting ones, a few respondents had sought a course of "business studies" type but with more maths than usual; a few had particularly

wanted a broad course; a few had sought a management course that was not specialised into accountancy; and a mature student very positively expected the course to "strengthen career prospects". One candidate (note not already a student) spoke in a laudatory way of "Brunel's name in management areas"; and another responded "it was the best course that I could find".

Concerning the statistics courses, there is no need for a table - these replies were wholly dominated by the response of an interest in statistics gained from A and/or O level. All but 3 of the current students mentioned this (and these 3 had all transferred at Brunel from a mathematics course to a statistics course, so it is reasonable to suppose that these 3 had had an interest in statistics awoken after coming to university). 11(65%) of the candidates mentioned it.

There was again a "tail" of less frequent responses, including the 'good at maths/maths a favourite subject' response already noted for the MMS respondents, and a few respondents actively seeking careers as statisticians.

3.2 Sandwich Courses

All courses at Brunel University are four-year thin-sandwich courses - a unique feature that ought to be a great marketing strength.

Table 3.2.1. Student survey. Responses to the question "did you consciously and deliberately apply to Brunel because you wished to take a sandwich course?"

Yes	23 (44%)
Not solely	2 (4%)
No	14 (27%)
Applied for course content, "sandwich" irrelevant	5 (10%)
Had not finally decided - keep options open	2 (4%)
Did not know it was a sandwich	5 (10%)
(No response	1 (2%))

total number of respondents	52
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Clearly the 27% of 'no' replies require probing, but it is perhaps rather startling to find only 44% simply replying 'yes'. Most depressing of all is to find 10% of respondents who did not know Brunel's was a sandwich course when they first applied. These respondents elaborated their replies, saying that they found out when they came for interview - and found the idea attractive. The marketing problem here must be to identify and reach other potential students who would be attracted to sandwich courses - if only they knew that Brunel runs them.

This question was asked in a different form in the candidate survey, in the hope of eliciting shorter but more specific responses. 68 of the 74 applicants responded that they knew when they applied that this was a sandwich course - which still leaves 8% who did not. These 68 were then asked how important this factor was in their original decision to apply to Brunel.

Table 3.2.2. Candidate Survey. Importance of "sandwich" in decision to apply to Brunel

	MMS	Stats	Total
Unimportant	7	0	7
Of some importance	22	4	26
Very important	24	11	35
Total	53	15	68

This clearly shows that the "sandwich" element is viewed as of importance by a very large majority of applicants. (Perhaps the 7 MMS applicants who thought otherwise were particularly attracted by the course as such; deeper analysis of their responses finds nothing unusual about their replies to the "academic reasons" question discussed in section 3.1. Two of them in fact wrote in on their questionnaires that the sandwich element became very important to them on reflection after their interviews.)

3.3 Publicity Material

Information was sought as to what guides and publicity material were consulted while coming to the decision to apply to Brunel. It must be assumed that everyone consulted the UCCA Handbook; otherwise, the commonly-occurring responses were as follows:-

Table 3.3.1. Numbers (percentages) of respondents who consulted certain publicity items while deciding to apply to Brunel

	Student survey MMS Stats		Candidate MMS	survey Stats
Brunel Prospectus	37(95%)	12(92%)	53(93%)	13(76%)
Compendium of University Entrance Requirements	5(13%)	0	31(54%)	6(35%)
Brian Heap's book listing entry grades	4(10%)	2(15%)	19(33%)	8(47%)
CRAC guide(s)	4(10%)	0	10(18%)	1(6%)
[total number of respondents]	[39]	[13]	[57]	[17]

These figures should be interpreted with caution. There is evidence in the detailed responses that the students had to some extent forgotten what they had consulted, and that the candidates might have been somewhat confused as to exactly which publication was which. Nevertheless, it is clear that the Prospectus is doing its job of reaching the vast majority of applicants. (In a subsidiary question in the student survey, 69% of all respondents indicated that they had obtained their own personal copy of at least one publicity item, which in many cases will be the Prospectus.) It is disappointing to see the small proportion using the CRAC guides, which are in general very professional and highly esteemed by universities. There was quite a long "tail" of rarely-occurring "other" responses, from both the students and the candidates. It does seem clear that there is ample room for a widely-available general publication describing different universities' courses, perhaps by subject areas. The Compendium of University Entrance Requirements has been re-launched, substantially re-styled, for 1988 applicants; whether this will fill the vacuum remains to be seen.

Both surveys also asked respondents for their opinions about the Prospectus. The students' opinions are not reported here, as their views have to some extent been overtaken by re-design of the Prospectus. But it is of great interest to list the candidates' opinions, on the current {1987 entry) Prospectus:-

Table 3.3.2. Candidate Survey. Opinions on the Prospectus

	was there sufficient information about...		
	the University as a whole	the particular course	"sandwiches"
Not enough information	8 (11%)	32 (43%)	36 (49%)
About right	59 (80%)	35 (47%)	32 (43%)
Too much detail	1 (1%)	0	0
No response	6 (8%)	7 (9%)	6 (8%)
Total number of respondents: 74			

Clearly more information about the individual courses and about the "sandwich" structure could usefully be included.

3.4 Pre-conceptions of Brunel

The students were asked for "an impression of the perceptions you had acquired of Brunel before coming for interview" (it was not thought really proper to ask this question of the candidates). This question generated a substantial number of free-answer responses - and it is depressing to relate that a large proportion of them were highly unfavourable.

The variety of multiple responses makes a tabular display of results hard to put together. However, the responses can be loosely grouped as "unfavourable", "neutral" and "favourable" - and 41% of responses were in the "unfavourable" group, 33% "neutral" and only 25% "favourable". This grouping is of course to some extent subjective, but in many cases the force of the responses leaves no doubt as to the validity of the grouping; comments such as "totally void of all cultural or social activities", "very dull and boring" and "dull and dreary, concrete jungle" cannot but be unfavourable!

(The "concrete jungle" was in fact the most commonly occurring of responses (31% of all respondents mentioned it). Surely we could find some photographs for the Prospectus that go some way towards overcoming it.)

Another common response was that Brunel is dominated by the engineering subjects. Although it was sometimes explicitly conceded that engineering at Brunel is of high class, it was the clear import of many of these responses that the concentration on engineering was to the detriment of other disciplines. Brunel has gone a long way in promoting itself as being of excellence in engineering (and indeed this claim is readily substantiable); but the suggestion from the present research is that this 'positioning' may have gone too far in relation to the other subjects.

Finally in this section, it is worth quoting the respondent who, knowing of the financial exigencies at Brunel, regarded the University as being "short of resources. I was, hence, expecting a very 'poverty stricken' department and perhaps unenthusiastic staff". Fortunately, this respondent was able to continue: "happily, this

was not the case" . This is symptomatic of the major and dramatic improvement in perception of Brunel that appears to be a normal occurrence when applicants actually attend for interview.

3.5 Perceptions from Interview

The student questionnaire included a free-answer question asking for perceptions acquired at the interview. This generated a very large number of responses, most of which were laudatory, often highly so.

Table 3.5.1. Student Survey. Summary of responses on perceptions acquired at interview

	Number (percentage) of respondents listing this response						
Favourable comments concerning course	39 (75%)						
Favourable comments concerning "sandwich"	17 (33%)						
Favourable comments concerning students *	23 (44%)						
Favourable comments concerning general friendliness	19 (37%)						
General impression of campus	<table> <tr> <td>{ favourable **</td> <td>12 (23%)</td> </tr> <tr> <td>{ unfavourable</td> <td>11 (21%)</td> </tr> <tr> <td>{ neutral</td> <td>5 (10%)</td> </tr> </table>	{ favourable **	12 (23%)	{ unfavourable	11 (21%)	{ neutral	5 (10%)
{ favourable **	12 (23%)						
{ unfavourable	11 (21%)						
{ neutral	5 (10%)						
Wanted more time to look around	4 (8%)						
On the whole, about as expected	7 (13%)						

[Total number of respondents: 52]

* normal procedure at interviews is for- candidates to meet some current students as well as members of staff.

** but in many cases this is an interpretation of "not as bad as I'd expected".

The generally very favourable nature of the responses is evident from the table. This is particularly important in view of the very unfavourable pre-conceptions reported in section 3.4. A few direct

Quotations are given in Appendix B; some of these are quite euphoric, but are in no sense atypical of the general tenor of these responses.

The opportunity for applicants to meet (at length) current students when they come for interview is clearly very well received. Without exception, all comments about this were highly favourable.

The student questionnaire also asked respondents whether the interview played a "substantially important role" in their eventual decision to accept Brunel's offer of admission. 73% of the respondents indicated that it did. A further subsidiary question asked whether individual interviews are in fact worthwhile at all, or whether open days would suffice. No fewer than 83% were in favour of individual interviews. The responses were often elaborated, usually along the lines that the personal and individual attention is welcomed and that it is easier for interviewees to ask specific questions in one-to-one conversation than in a group.

In the candidate survey, the question about reactions to interview were asked in a much more structured form. Virtually all (in all cases, over 90%) of the candidates were satisfied with the admissions tutor's talk about the course, with the opportunity to raise questions with members of staff, and with the opportunity to talk with students. However, only about 70% felt they had been given enough information about the "sandwich" arrangements, and again only about 70% about the university in general.

The candidates' preferences for interviews or open days are summarised in the table:-

Table 3.5.2. Candidate Survey. Numbers (percentages) of candidates preferring interview or open day

Preference	MMS	Stats
Individual interview	28 (49%)	9 (53%)
Invitation to open day before any offer is made	8 (14%)	5 (29%)
Invitation to open day after an offer is made	15 (26%)	2 (12%)
Offer made by post only, without any invitation to visit the university	0	1 (6%)
Any of the above except offer by post only *	6 (11%)	0
total number of respondents	57	17

* this response was indicated explicitly as a write-in by the respondent on the questionnaire form

The preference for an individual interview is less overwhelming than in the data from the student survey, but it still remains the most-preferred choice.

The candidates were invited to elaborate on the reasons for their preferences. Nearly all commented to the effect that it is certainly necessary to actually visit and see the university. Several backed-up their preference for the third entry in the above table by remarking that it is a waste of time/money to go to a university if it transpires that no offer (or an unattainably high one) is made. While this is an entirely reasonable point of view, it did appear that some of these respondents were quite oblivious to the fact that the university might actually be selecting. Thus, one quotation: "knowing the offer before an invitation to the general 'open day' is important to a student so that he or she can, after seeing the university confidently decide to accept or decline the offer".

However, many respondents clearly did realise that a two-way process does go on.

There were some comments that interviews are too pressurising ("the applicant can become very tense and worried about such an ordeal!!"; though in one case "[nevertheless,] I was made to feel relaxed at Brunel"). Despite this, many respondents were very positive in their preference for an individual interview, even feeling that it can be good to put applicants under pressure: "despite the harrowing ordeal of an interview I still feel it is beneficial for the applicant and tutors in order to gain an insight into the finer details of each other's case". There were many favourable comments about individual attention, that the university is trying to get an impression of a candidate as a person and not only rely on the school reference, that applicants can ask individual questions that they may feel unable to in a group, that information will be specific and not just vague generalisations, and that candidates can actually meet staff who will be tutors/lecturers. In the words of a student: "Yes, [interviews] are worthwhile. They give a chance to see the University. They show that the University has time for you and is serious in considering you. It is very difficult to put across the person you are on an UCCA form. Interviews help alleviate this, especially when the interviewee is made to feel at ease, as I was at Brunel."

In contrast, here are the remarks of a student about an open day at a (highly prestigious) university elsewhere:-

"The open day was absolutely awful. I hated where it was situated, it was a dingy and lonely place. We were all crowded into a room, where a bloke stood up front and talked about politics of the university and of the lecturers who were to take

the course, little was said of the course contents itself. I had no interaction with students or lecturers."

Brunel admissions tutors invest a great deal of time and effort in running individual interviews. The evidence from these surveys is, very strongly, that this is wholly worthwhile. As discussed in section 3.4, pre-conceptions of Brunel are often very poor; but these seem to be totally changed by the interview experience. Neither does there seem any need to much alter the existing interview arrangements. Pulling together the threads of the students' and candidates' responses, it is evident that the requirements are: a friendly reception; individual attention; a "mess" room while waiting for individual interview; a detailed, enthusiastic but honest exposition of the course and of "sandwich" arrangements; some "administrative" details, e.g. about accommodation; a tour of the campus; and, above all, to talk with students. All of which coincides almost exactly with the current practice for these courses.

3.6 Reactions to Offers of Admission

The students were asked what factors were important in their decision to accept Brunel's offer of admission. As with some other questions, it was not considered proper to ask this of the candidates.

The responses here are obviously of great importance to Brunel, but the question turned out in some ways to be less than fully satisfactory, for it became evident that many respondents had in a sense already partially answered it elsewhere in their replies. Furthermore, it was often very difficult to distinguish responses about the course as such and about the "sandwich" nature of the

course; each of the first two factors in the table following probably frequently also implies the other, so that the quoted numbers of respondents for these factors are likely to be considerable under-estimates. It was also often difficult to disentangle comments about "interview" and about "general friendliness". With these caveats, the free-answer responses to this question are summarised in the table.

Table 3.6.1. Student survey. Numbers (percentages) of respondents mentioning various factors as important in their decision to accept Brunel's offer

The course	26	(50%)
"Sandwich" nature of course	25	(48%)
Level of entry grades required	23	(44%)
Favourable impression from interview	15	(29%)
General friendliness	10	(19%)
Geographical location of Brunel	18	(35%)
Availability of accommodation	6	(12%)
Preference for small university	6	(12%)
Connection with Henley	6	(12%)
Bad experience(s) elsewhere	5	(10%)
Others	18	(35%)

[Total number of respondents: 52]

As can be seen, comment about entry grades occurred frequently - but these comments were very varied. Some respondents clearly appreciated offers that they felt were realistically attainable, while others positively appreciated fairly high offers; and occasionally it was explicitly stated that the grades made no difference!

Geographical location was also quite frequently mentioned, though often as being of secondary importance. Sometimes the reference was to location vis-à-vis home, but usually it was a (favourable) reference to Brunel being near but not actually in London. Clearly there could be a distinct marketing advantage here.

The "others" represent many factors each only mentioned rarely. Among these, there was one reference to "decent computing facilities", but one student indicated that emphasis on computing at another university was a distinct disadvantage for it! Surprisingly, there was only one reference to sports and social facilities, even though this seems very important to many applicants when they come for interview.

Some particularly interesting and favourable quotations are given in Appendix B. It is noticeable how often the "sandwich" idea and/or a favourable interview experience turns up in these.

4. Further Work

Considerable further work could obviously be done with the survey results, though with the fairly small numbers it is not sensible to carry formal analysis down to any great depth of complexity. The high response rate in the candidate survey suggests that candidates are actually pleased to have their views canvassed, and that good response might be obtained to a more elaborate questionnaire.

References

Department of Education and Science (1986): Projections of demand for higher education in Great Britain 1986-2000. London: DES.

Royal Statistical Society (1985): Projections of student numbers in higher education. J.R. Statist. Soc. A, 148, 175-213.

Secretaries of State for Education and Science, for Wales, for Northern Ireland, and for Scotland (1987): Higher education, meeting the challenge. Cmnd 114. London: HMSO.

Universities Central Council on Admissions: Annual Reports, various years. Cheltenham: UCCA.

APPENDIX ADATA ON APPLICANTS AND ADMISSIONS TO UNIVERSITIES

Throughout, these figures relate to "home" students only. "Home" now includes nationals of other EEC countries, but the numbers of these are small. Very few "overseas" undergraduates come to Brunel University, and in any case the marketing situation in regard of them is different; hence they have been excluded throughout. A slight change of definition of "home" student occurred in 1981.

A small number of students apply, and are admitted, to Universities other than through the UCCA system. In particular, this category included before 1986 "direct entrants" sponsored by a company to attend a University course; these applicants are not included in the national figures except for the years 1973 and 1974, where they are included (national figures compiled without them are not given in the UCCA Reports for those years). However, they are included in the Brunel figures; the greatest number involved in the Brunel figures in any one year is 3. (From 1986 onwards, all "direct entrants" have been required to apply through UCCA and in consequence appear in the corresponding national data as well as in the Brunel data.)

Not all new entrants to Universities start at year 1, though again numbers involved are small. In general, any such students would be included in the Brunel figures; but not all will appear in the national figures, since not all would apply through UCCA.

Some new students withdraw within a few days of starting their course. Arguably these should not be regarded as having actually joined their University. Any such would however be included in both the national and the Brunel data, except for the national data on numbers admitted up to and including 1982; these data are taken from UCCA tabulations (no longer included in the Annual Reports) based on data supplied by University Registries, and are likely to exclude at least some such cases. Numbers involved at Brunel are very small, but there may be up to a few hundred of these cases each year nation-wide.

Rather larger numbers of students defer their entry to University for a year (e.g. apply during 1982-83 for entry in October 1984). In the Brunel data, these are counted as admissions in the year of entry; but in the national data, they are counted as admissions in the year of application. Otherwise, each "year" refers to admissions in October of that year of applicants who applied during the preceding 12 months.

Students admitted to Universities under the UCCA "clearing" and related schemes are included in both the national and the Brunel data. Such students are not included in the numbers here recorded as applicants to Brunel.

National Data.

Source: UCCA Annual Reports. It has not been possible to obtain a few individual data items; these are indicated by n/a. Indexes (1971=100) have been provided for these series, for ease of comparison.

Total numbers, for all Universities and all courses, through the UCCA scheme:-

	1971	1972	1973	1974	1975	1976	1977	1978
APPLICANTS	114968	113966	112852	111973	114879	121804	132047	134588
Index(1971=100)	100	99	98	97	100	106	115	117
ADMITTED	56607	57695	61914	64419	65749	n/a	71578	74339
Index (1971=100)	100	102	109	114	116		126	131

	1979	1980	1981	1982	1983	1984	1985	1986
	142228	147249	149330	156675	157015	156488	157085	152588
	124	128	130	136	137	136	137	133
	76631	78939	74514	72634	69631	71768	76181	76896
	135	139	132	128	123	127	135	136

Total numbers of applicants through the UCCA scheme for all Universities, whose first choice of course was for a mathematics subject. This includes Computer Science courses up to and including 1977. It excludes joint courses such as Mathematical Studies with Education or Mathematical and Management Studies.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
	5687	5061	4568	4298	4040	n/a	4515	3156	n/a	n/a	4059
Index(1971=100)	100	89	80	76	71		79	55			71

	1982	1983	1984	1985	1986
	4630	4564	4282	3869	3274
	81	80	75	68	58

Total numbers, for all Universities, admitted to a mathematics course (including computer science until 1977, excluding joint courses). There are inconsistencies of definition among these data in respect of whether or not they include students admitted other than through UCCA. This may make a difference of about 100 in some cases.

	1971	1972	1973	1974	1975	1976	1977	1978
	3835	3627	3325	3252	3082	n/a	3412	2527
Index(1971=100)	100	95	87	85	80		89	66

	1979	1980	1981	1982	1983	1984	1985	1986
	n/a	n/a	2930	2984	2908	2926	2874	2593
			76	78	76	76	75	68

Brunel data.

Source: Brunel University senate papers.

The data are, for each mathematics course, the number of applicants (the upper figure in each cell of the table) and the number admitted (the lower figure). For the year 1974, information on the number of applicants is not available.

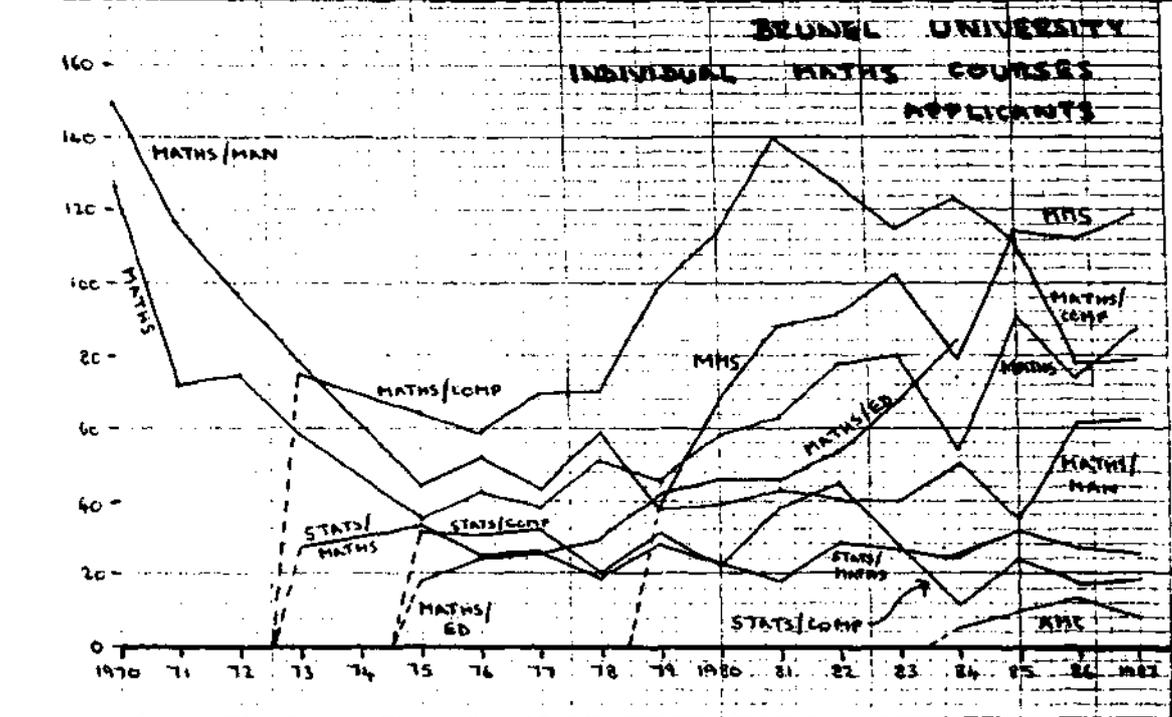
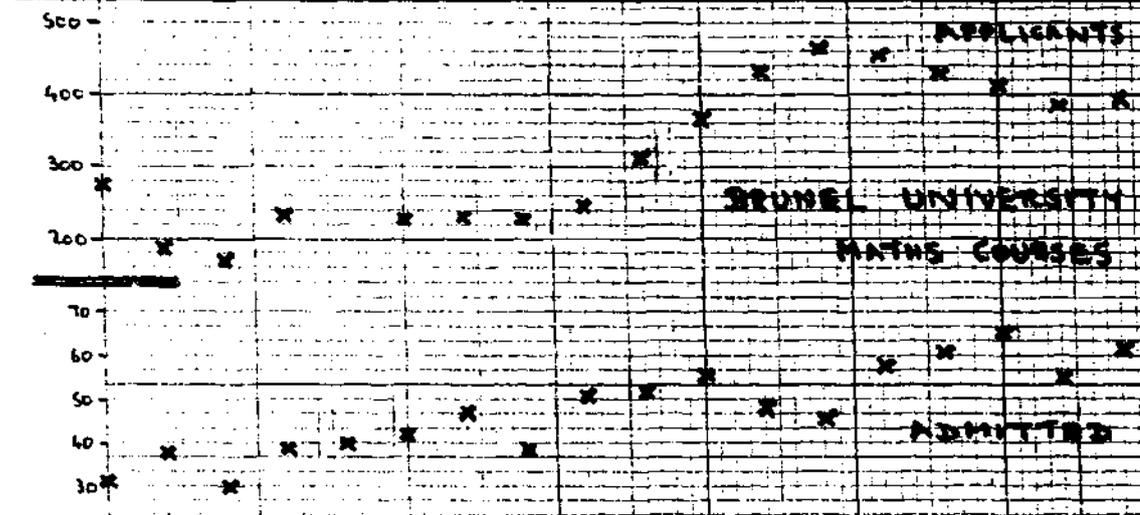
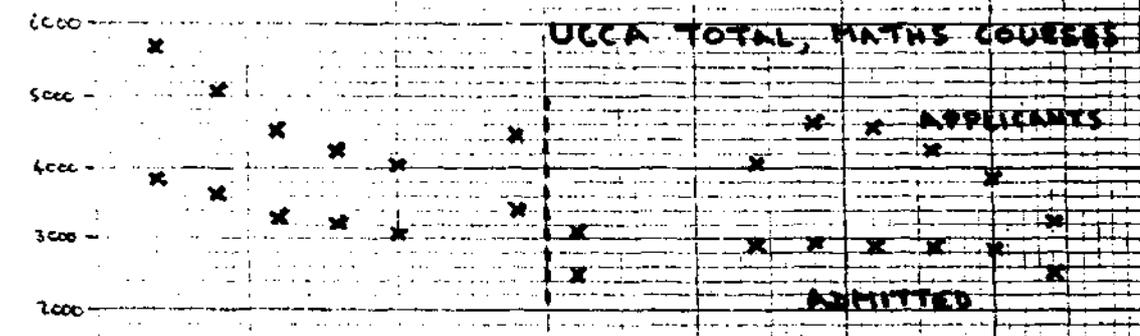
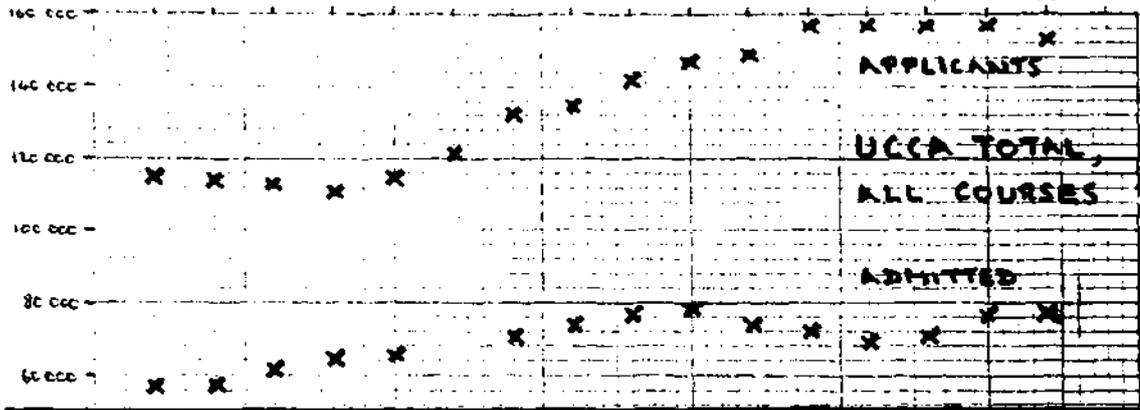
There is inconsistency of treatment of those students who are admitted to a course other than that for which they applied, or who change course very soon after starting; there are likely to be a few such students in each year. Arguably they should be counted as admitted to the course to which they change, and this convention has certainly been followed in some cases; but there also exist other cases where such students are counted as admitted to the course for which they originally applied.

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987 †
MATHS *	126	72	75	53	-	35	43	38	51	43	58	63	77	80	54	90	74	87
	10	15	14	9	9	8	10	7	8	5	7	5	6	13	6	13	8	9
AMC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	10	13	8
															0	4	2	2
MATHS/MAN	149	116	97	78	-	44	52	43	59	37	39	43	40	40	50	35	61	62
	21	22	16	17	16	5	15	11	14	7	6	11	6	6	7	5	8	8
MATHS/COMP		-	-	75	-	64	59	69	70	98	113	140	128	115	123	112	78	79
				10	5	9	13	12	14	15	22	14	16	17	24	24	14	16
MATHS/ED	-	-	-	-	-	18	24	25	29	41	45	45	53	67	84	-	-	-
						5	5	2	8	10	6	5	4	4	6			
STATS/MATHS	-	-	-	27	-	33	24	25	19	28	23	18	28	26	24	32	27	25
				3	8	11	3	4	4	4	3	3	7	2	4	7	4	5
SIATS/COMP					-	32	31	32	20	31	22	38	45	27	12	24	17	18
					2	4	1	3	3	3	3	2	2	3	1	0	2	1
MMS		-	-	-	-	-	-	-	-	38	68	88	91	102	79	114	112	20
										8	9	8	5	13	13	13	17	20
TOTAL	275	188	172	238	-	226	233	232	248	316	368	435	462	457	431	417	382	399
	31	37	30	39	40	42	47	39	51	52	56	48	46	58	61	66	55	61

Mathematics-based courses at Brunel: 25 applicants and

* 1970 and 1971 figures refer to the former "Mathematics with Technological Applications" course.

† 1987 figures are provisional; they show the situation as it was understood in mid-September of that year, i.e. about three weeks prior to the actual start of term.



APPENDIX BQUOTATIONS

Some direct quotations of responses in the Student Survey to the question on perceptions acquired at interview

"Sitting round a table in one room with just a few people helps to make you feel treated quite well, i.e. more personal atmosphere".

"Open days are useful but are very impersonal. It would be totally out of character for a small university like Brunel to offer purely open days".

"It was good to speak to some present students whilst waiting for interview. The type of people who sat with us did a lot to convince me that I could fit in.... This was the only [University] that actually interviewed me. This gave the impression that this course was something special (perhaps more demanding). Being asked to do some maths helped create this image".

"The students... seemed much more interesting and intelligent than any students I encountered at other universities".

"[I was] over-ridden with enthusiasm for the MMS course and the prospect of actually working in a real company".

"The discussions I had with two excellent fourth year students weighed heavily in my decision to come here".

"Everybody seemed very enthusiastic about the course. I felt 'at home'... The interview was the best I had. I was made to feel wanted, rather than an interview just being 'a task' - as with other Universities".

"They were the only students out of all the universities that actually enjoyed the course".

"I was surprised with the complexity of his work [a student's Industrial Training placement] ... it was impressive; to think I could be doing that in a couple of years' time seemed exciting".

Some direct quotations of responses in the Student Survey to the question on reasons for accepting Brunel's offer

"[Even if] Brunel had asked for BBB then because of the sandwich course concept I would have firmly accepted".

"Should I not have been successful in reaching Brunel, I don't feel that I would happily have gone to my second choice. My reaction would have been to wait a year and try for Brunel again".

"I was under a lot of pressure to put a firm acceptance on one of the two higher offers especially from my head of sixth form. This seemed a stupid situation, and although the possibility of scaring away students should be avoided I feel an attempt to keep the same grades as other universities with similar courses should be made".

[With reference to an interview at another university, which has made a name for itself in the development of "user-friendly" computer packages] "He refused to answer any questions on computers, as he thought they were irrelevant, because he couldn't use them" (and...) "I took an immediate dislike to the university and my interviewer, because he interviewed 3 people at a time and was more interested in my headmaster being a JP than anything else on my UCCA form. I was so disgusted with his attitude, I would have rather gone through 'clearing' than gone there".

"I was so impressed with Brunel's lack of 'artiness' that I just had to come here. It was both central to future jobs .. and seemed to be a hub of mathematical and technical learning".

"Brunel finally came out on top, purely because of the sandwich course".

"I'm sure that there are many potential sponsored students which MMS would suit admirably - especially with the thin sandwich advantages".

"I actually had a greater number of reasons for choosing [another University] than I did for Brunel: [list of 6 reasons] but I felt that these were outweighed by the following factors:

Brunel has 18 months of industrial training

and. The atmosphere and contact with Brunel was more personal".

"Brunel won over [XYZ University] because of the more formal interviews and its sandwich course. One factor I would state is that about sixty or seventy people attended the [XYZ] interview with me, whereas only eight went to Brunel's. This gave Brunel a far more

personal feeling and led me to taking Brunel as my firm offer".

"So I went from the position of using Brunel as a filler on my UCCA form (No.5 on the list, I think) to wanting to actually go here after visiting and meeting some of the people and being impressed by the compact but efficient set-up".