

**Original citation:**

Dain, J. A. (1988) Recruitment and performance of female and male students in science. University of Warwick. Department of Computer Science. (Department of Computer Science Research Report). (Unpublished) CS-RR-134

**Permanent WRAP url:**

<http://wrap.warwick.ac.uk/60830>

**Copyright and reuse:**

The Warwick Research Archive Portal (WRAP) makes this work by researchers of the University of Warwick available open access under the following conditions. Copyright © and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable the material made available in WRAP has been checked for eligibility before being made available.

Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge. Provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

**A note on versions:**

The version presented in WRAP is the published version or, version of record, and may be cited as it appears here. For more information, please contact the WRAP Team at: [publications@warwick.ac.uk](mailto:publications@warwick.ac.uk)



<http://wrap.warwick.ac.uk/>

# Research report 134

## RECRUITMENT AND PERFORMANCE OF FEMALE AND MALE STUDENTS IN SCIENCE

**Julia Dain**

(RR134)

We present comparative figures for the recruitment of male and female students on university degree courses in scientific disciplines in the United Kingdom and at the University of Warwick. We also present comparative figures for the performance of male and female science students at the University of Warwick.

Department of Computer Science  
University of Warwick  
Coventry CV4 7AL  
United Kingdom

December 1988

# **Recruitment and Performance of Female and Male Students in Science**

*Julia Dain*

Dept of Computer Science  
University of Warwick  
Coventry CV4 7AL

## *ABSTRACT*

We present comparative figures for the recruitment of male and female students on university degree courses in scientific disciplines in the United Kingdom and at the University of Warwick. We also present comparative figures for the performance of male and female science students at the University of Warwick.

December 16, 1988

## **Recruitment and Performance of Female and Male Students in Science**

*Julia Dain*

Dept of Computer Science  
University of Warwick  
Coventry CV4 7AL

The tables in this report present comparative figures for the recruitment and performance of male and female undergraduate students in scientific disciplines.

The first two tables give figures for national undergraduate recruitment to universities through the Universities Central Council on Admissions (UCCA). The data are taken from the UCCA Reports for 1982-3 to 1985-6 inclusive ([1] - [4]). Table 1 gives the numbers of students (home and overseas) admitted to universities in different science subject groups. Table 2 gives total numbers of students applying to UCCA for all subject groups and total numbers of students accepted for university entry. To give some international context, according to a recent article in *The Times* [5], in Western Europe 3% of university science and engineering places are filled by women; in Eastern Europe the figure is 30%, and in Asia between 10 and 15%.

The remaining tables relate to the University of Warwick. Tables 3 - 7 give figures for the Departments of Biological Sciences, Chemistry, Computer Science, Engineering, Mathematics and Physics. Table 3 gives figures for admissions. Table 4 gives the numbers of mature students in the undergraduate intake. Table 5 shows the numbers of students transferring out or withdrawing from their degree course. Table 6 shows the average A-level points scores of the undergraduate intake. Table 7 shows the total numbers of each class of degree awarded for the five-year period 1983-87 in the different departments. Table 8 shows the percentage of women in the undergraduate intake and the percentage of good degrees which are obtained by women. Table 9, the data for which are taken from the University of Warwick Academic Database 1987/88 [6], gives the registration figures for undergraduates, postgraduates and in-service students in the different faculties, as at the end of October 1987.

Table 1 - Undergraduate Admissions through UCCA

	Biol Sci		Chem	
	M	F	M	F
1983	952 (45.6%)	1,138 (54.4%)	1,794 (71.7%)	709 (28.3%)
1984	1,038 (48.1%)	1,121 (51.9%)	1,820 (69.7%)	791 (30.3%)
1985	2,674 (46.3%)	3,104 (53.7%)	1,704 (69.3%)	755 (30.7%)
1986	2,633 (46.4%)	3,038 (53.6%)	1,693 (69.3%)	750 (30.7%)
	Comp Sci		Eng	
	M	F	M	F
1983	1,554 (80.3%)	381 (19.7%)	9,975 (90.1%)	1,092 (9.9%)
1984	1,728 (83.5%)	342 (16.5%)	10,368 (88.7%)	1,317 (11.3%)
1985	1,585 (86.7%)	243 (13.2%)	10,542 (89.9%)	1,187 (10.1%)
1986	1,639 (86.3%)	261 (13.7%)	10,916 (89.4%)	1,299 (10.6%)
	Maths		Physics	
	M	F	M	F
1983	2,013 (66.4%)	1,018 (33.6%)	2,343 (84.9%)	418 (15.1%)
1984	2,020 (66.3%)	1,025 (33.7%)	2,332 (85.8%)	387 (14.2%)
1985	1,932 (68.1%)	904 (31.9%)	2,206 (84.4%)	407 (15.6%)
1986	1,738 (67.6%)	832 (32.4%)	2,014 (82.5%)	426 (17.5%)

Table 2 - UCCA Applications and Acceptances (all subjects)

	Applications		
	M	F	Total
1983	101,666 (58.9%)	71,072 (41.1%)	172,738
1984	101,013 (58.2%)	72,661 (41.8%)	173,674
1985	101,443 (57.5%)	75,110 (42.5%)	176,553
1986	98,638 (56.8%)	75,141 (43.2%)	173,779
	Acceptances		
	M	F	Total
1983	40,356 (58.0%)	29,275 (42.0%)	69,631
1984	41,431 (57.7%)	30,337 (42.3%)	71,768
1985	43,842 (57.5%)	32,339 (42.5%)	76,181
1986	43,995 (57.2%)	32,901 (42.8%)	76,896

Table 3 - Undergraduate Admissions in the Science Faculty, University of Warwick

	Biol Sci		Chem		Comp Sci		Eng		Maths		Physics	
	M	F	M	F	M	F	M	F	M	F	M	F
1983	56	32	36	16	46	4	87	4	63	35		
1984	46	41	28	15	59	8	94	13	96	17		
1985	50	31	22	13	80	7	124	17	80	34		
1986	50	39	32	14	65	11	140	21	79	36		
1987	47	47	36	16	103	14	193	21	106	33		
total	249	190	154	74	353	44	638	76	424	155		
as %	56.7	43.3	67.5	32.5	88.9	11.1	89.4	10.6	73.2	26.8		

Table 4 - Mature Students in the Undergraduate Intake

	Biol Sci		Chem		Comp Sci		Eng		Maths		Physics	
	M	F	M	F	M	F	M	F	M	F	M	F
1983	1	4					21	0	3	1		
1984	2	2					24	4	2	0		
1985	6	4					44	2	4	3		
1986	4	5					38	0	3	0		
1987	1	0	1	0	6	1	33	0				
total	14	15	1	0	6	1	160	6	12	4		
as %	48.3	51.7					96.4	3.6	75	25		

Table 5 - Undergraduate Transfers and Withdrawals

	Biol Sci		Chem		Comp Sci		Eng		Maths		Physics	
	M	F	M	F	M	F	M	F	M	F	M	F
1983	11	5	1	0	0	1	21	1	8	6		
1984	11	5	8	2	3	5	12	4	11	3		
1985	12	3	4	7	7	4	17	1	6	5		
1986	17	4	2	1	0	0	22	3	1	1		
1987	5	4	0	0	0	1	3	0	0	0		
total	56	21	15	10	10	11	75	9	26	15		
as %	72.7	27.3	60	40	47.6	52.4	89.3	10.7	63.4	36.6		

Table 6 - Average A-level Points Score for the Undergraduate Intake

	Biol Sci		Chem		Comp Sci		Eng		Maths		Physics	
	M	F	M	F	M	F	M	F	M	F	M	F
1983	10.9	10.8	10.6	9.8	14.1	12.7			13.5	13.8		
1984	10.1	10.6	8.6	8.4	11.7	14.0			13.9	12.8		
1985	10.3	10.4	8.5	9.0	11.7	11.0			13.7	13.4		
1986	10.8	10.4	8.9	9.3	11.9	11.6			13.5	13.4		
1987	10.6	11.3	8.7	9.1					13.6	13.5		
all	10.5	10.7	9.1	9.1	12.4	12.3			13.6	13.4		

Table 7 - Degree Classifications 1983-1987

	Biol Sci		Chem		Comp Sci		Eng		Maths		Physics	
	M	F	M	F	M	F	M	F	M	F	M	F
1	3	7	22	6	33	1		2	57	14	17	0
2.1	62	71	22	16	75	7		3	49	20	41	10
2.2	87	71	29	21	55	7		10	66	16	84	21
3	22	13	28	9	34	4		7	30	8	56	9
P	5	2	8	0	10	1			19	3	21	4

(Note: the figures for Maths are for the years 1983, 1986, 1987 only)

Table 8 - Comparison of Women in Intake with Women obtaining 1 or 2.1 Degrees

Dept	Women in Intake	Women in 1 + 2.1
Biol Sci	43.3%	54.5%
Chem	32.5%	33.3%
Comp Sci	11.1%	6.9%
Eng	10.6%	
Maths	26.8%	24.3%
Physics		

Table 9 - Student Registrations for October 1987

	Arts		Ed. Studies		Science		Soc. Studies		Total	
	M	F	M	F	M	F	M	F	M	F
undergrad	438	835	107	490	1357	402	821	672	2723	2489
postgrad	41	52	104	160	229	47	305	145	711	422
in-service	0	0	50	123	0	0	0	0	50	123
all	479	887	279	773	1586	449	1126	907	3484	3034
as %	35%	65%	27%	73%	78%	22%	55%	45%	53%	47%

(Note: the Total column includes 14 male and 18 female non-matrix postgraduate student registrations which do not appear in any of the faculty registrations)

### Discussion

It can be seen from Table 2 that the numbers accepted for university entrance nationally are still rising, for both men and women. However the number of applications received has declined for men and increased for women. The percentage of men accepted compared to women has remained fairly stable, with the percentage of women showing a small but steady rise from 42.0% in 1983 to 42.8% in 1986. 44.6% of men who apply are accepted compared with 43.8% of women. Looking at national admissions in the science subjects considered here, Biological Sciences has good female recruitment at just over half; Mathematics and Chemistry come next at just under one third; and Physics, Computer Science and Engineering have poor female recruitment. Perhaps the most startling aspect is the drop in numbers of women admitted to Computer Science courses, both in actual numbers and in percentage terms, from 381 (19.7%) in 1983 to 261 (13.7%) in 1986.

The percentages of women admitted at the University of Warwick can be compared with the national percentages using Tables 1 and 3. Biological Sciences are well below the national figure, Mathematics and Computer Science are slightly below, Engineering equal and Chemistry slightly above. The lower percentage in Biological Sciences probably reflects the nature of these degrees at Warwick, which all require a good Chemistry A-level. Comparing the percentages of transfers and withdrawals in Table 5 with the admissions in Table 3 shows that in Biological Sciences women are less likely to drop out than men, in Mathematics more likely and in Computer Science much more likely. It should be borne in mind that these figures include transfers to other courses; the Computer Science figures thus reflect the popularity of the Computer and Management Science degree with women, as this course entails a transfer out of Computer Science at the end of the second year.

The average A-level points scores in Table 6 are similar for the sexes in each department, probably due to the selection methods used by admissions tutors. However, using Tables 7 and 8 to compare performance as measured by degree classifications, it can be seen that there are some differences between the departments: women are more likely than men to obtain a good degree in Biological Sciences and less likely in Computer Science. The data are incomplete for Physics but it appears that women are not likely to gain a good degree, with no firsts and 10 women out of 44 graduates gaining upper seconds. Table 7 also shows interesting differences between the departments in the distribution of degree



classifications for men. For example, a man in Mathematics is much more likely to gain a first than a man in Biological Sciences.

Table 9 shows that the disproportion between males and females in the Science Faculty becomes even greater at postgraduate level. For undergraduate registrations the male to female percentages are 77% to 23% and for postgraduates 83% to 17%. In Biological Sciences, there is a startling change in the ratio from 57% males in the undergraduate intake to 71% postgraduates (figures not shown in any table).

### References

1. Universities Central Council on Admissions. *Twenty-first report 1982-3*. Universities Central Council on Admissions, Cheltenham, 1984.
2. Universities Central Council on Admissions. *Twenty-second report 1983-4*. Universities Central Council on Admissions, Cheltenham, 1985.
3. Universities Central Council on Admissions. *Twenty-third report 1984-5*. Universities Central Council on Admissions, Cheltenham, 1986.
4. Universities Central Council on Admissions. *Twenty-fourth report 1985-6*. Universities Central Council on Admissions, Cheltenham, 1986.
5. Blaazer, C. The top jobs that are just waiting for the right women. *The Times* (7 January 1988), 23.
6. University of Warwick. *Academic Database 1987/88*. University of Warwick, Coventry, November 1987.