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Introduction

This material is produced by the Royal Society of Chemistry's Education Department in response to frequent demands for up-to-date statistical information on chemical education. The first edition was published in 1992, and this edition includes new data, new information and revised analyses.

It is intended primarily for those who advise young people on courses and careers in chemistry. It is also relevant to those with an interest in the progress of chemistry as a subject.

To promote the use of this material by speakers the data are accompanied by brief factual comments and graphical representations (designed as possible OHP masters) to draw attention to the pertinent features. Information on the Society's qualifications and activities in the educational arena is also included.

The data included are those considered to be the most relevant and reliable and are not intended to be comprehensive. Other subjects are included to place the chemistry statistics in perspective.

The Society thanks the many organisations and professional bodies that helped in supplying these statistics.

Further information on any of the data included here can be obtained from:

Royal Society of Chemistry
Thomas Graham House
Science Park, Milton Road
Cambridge
CB4 0WF

Tel: 01223 432221
E-mail: education@rsc.org

GENERAL CERTIFICATE OF SECONDARY EDUCATION

The number of entries for GCSE double award science has increased since 1994.

This means that the number and proportion of students studying some chemistry to age 16 has increased. The figures given below are the total number of entries for GCSE, irrespective of age.

Number of GCSE Entries

	1993	1994	1995	1996	1997	1998	1999
Chemistry	51783	46720	43921	46924	45797	46275	46968
Physics	65174	53506	43839	46452	44892	45687	46685
Biology	83250	67176	58917	61158	47743	49267	47957
Double Science	349526	405185	462231	468652	464761	475232	474405
Single Science	96382	68526	73213	77067	75968	71006	68670
Total Entries in all Subjects	468634	5029599	5431625	5525620	5415176	5353095	5374751

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Chemistry	46917	46862	47068	48802	51225	53428	56764	59219	76656	92246	121988
Physics	46627	46477	46511	47953	50404	52568	56035	58391	75383	91179	120455
Biology	48715	48958	49171	51156	53389	56522	60082	63208	85521	100905	129464
Double Science	489913	509242	511871	519575	527017	494450	479789	478028	8433	15188	14994
Single Science	66036	66702	68393	71184	74095	89348	96374	98485	4445	1977	2030
Science								57316	537606	493505	449697
Additional Science									433468	396946	352469
Total Entries in all Subjects	1188121	1227483	1234885	1258245	1283147	1240766	1228833	1292675	1229945	1207134	1206091

The above figures have been translated in to the following table showing the GCSE Entries as a percentage of the 16 year old population of England, Wales and Northern Ireland.

	1992	1993	1994	1995	1996	1997	1998	1999
Chemistry	11.7	10.5	8.6	6.7	6.9	6.8	6.9	8.0
Physics	12.7	11.0	8.9	6.7	6.8	6.6	6.8	7.9
Biology	16.8	15.4	12.5	9.0	9.0	7.1	7.1	8.1
Double Science	52.8	56.3	67.3	70.5	68.8	68.9	64.5	80.4
Single Science	17.5	16.2	11.4	11.2	11.3	11.2	7.7	11.6

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Chemistry	7.8	7.5	7.5	7.6	7.9	8.4	8.9	8.6	12.2	15.3	20.8
Physics	7.7	7.5	7.4	7.5	7.7	8.36	8.9	8.4	12.0	15.2	20.5
Biology	8.1	7.9	7.9	8.0	8.2	8.9	9.5	9.1	13.7	16.8	20.1
Double Science	81.3	81.8	81.7	81.4	80.9	77.7	75.9	69.1	1.3	2.5	2.6
Single Science	11.1	10.8	10.9.1 1.1	11.1	11.4	14.0	15.2	14.2	0.7	0.3	0.4
Science	0	0	0	0	0	0	0	8.28	85.9	82.0	76.6
Additional Science	0	0	0	0	0	0	0	0	69.2	66.0	60.0

GENERAL CERTIFICATE OF EDUCATION - ADVANCED LEVEL

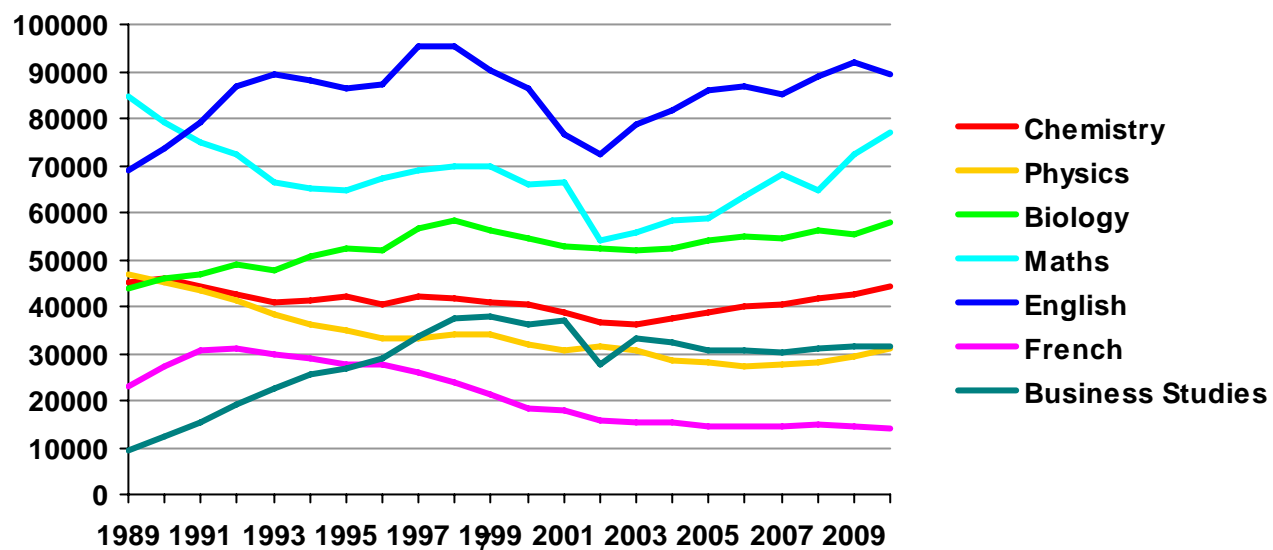
Entries for A-level chemistry as a proportion of the 18 year-old population have fallen since 1995, partially reversing a rising trend for the previous three years. The 1999 figures are only provisional. The figures given below are the total number of entries for GCE A Level, irrespective of age.

Number of A-level Entries

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Chemistry	44945	45968	44440	42697	40975	41231	42293	40418	42262	42825	41727
Physics	46786	45113	43416	41301	38168	36147	34802	33033	33243	34209	33880
Biology	43914	46084	46607	48742	47748	50851	52255	52053	56706	58439	56036
Maths	84774	79244	74972	72384	66340	64919	64605	67072	68880	69919	69945
English	68846	73715	79187	86779	89238	88214	86467	87343	95223	95316	90340
French	22774	27116	30794	31261	29886	28942	27563	27487	25881	23923	21072
Business Studies	9508	12644	15374	19179	22678	25515	26980	29085	33458	37644	37926
Total Entries in all Subjects	661591	680307	699041	731240	734081	732974	730415	740470	777710	794262	783692

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Chemistry	40856	38602	36648	36110	37254	38851	40064	40285	41680	42491	44051
Physics	32059	30701	31543	30583	28698	28119	27368	27466	28096	29436	30976
Biology	54814	52647	52132	51716	52264	53968	54890	54563	56010	55485	57854
Maths	67036	66247	53940	50602	52788	52897	55982	60093	64593	72475	77001
English	86428	76808	72196	78746	81649	85858	86640	85275	89111	91815	89320
French	18221	17939	15614	15531	15149	14484	14650	14477	14885	14333	13850
Business Studies	38226	36834	27680	33133	32253	30719	30648	30193	31025	31674	31503
Total Entries in all Subjects	771809	748866	701380	750537	766247	783878	805698	805657	827737	846977	853933

A Level Entries 1989 -2009



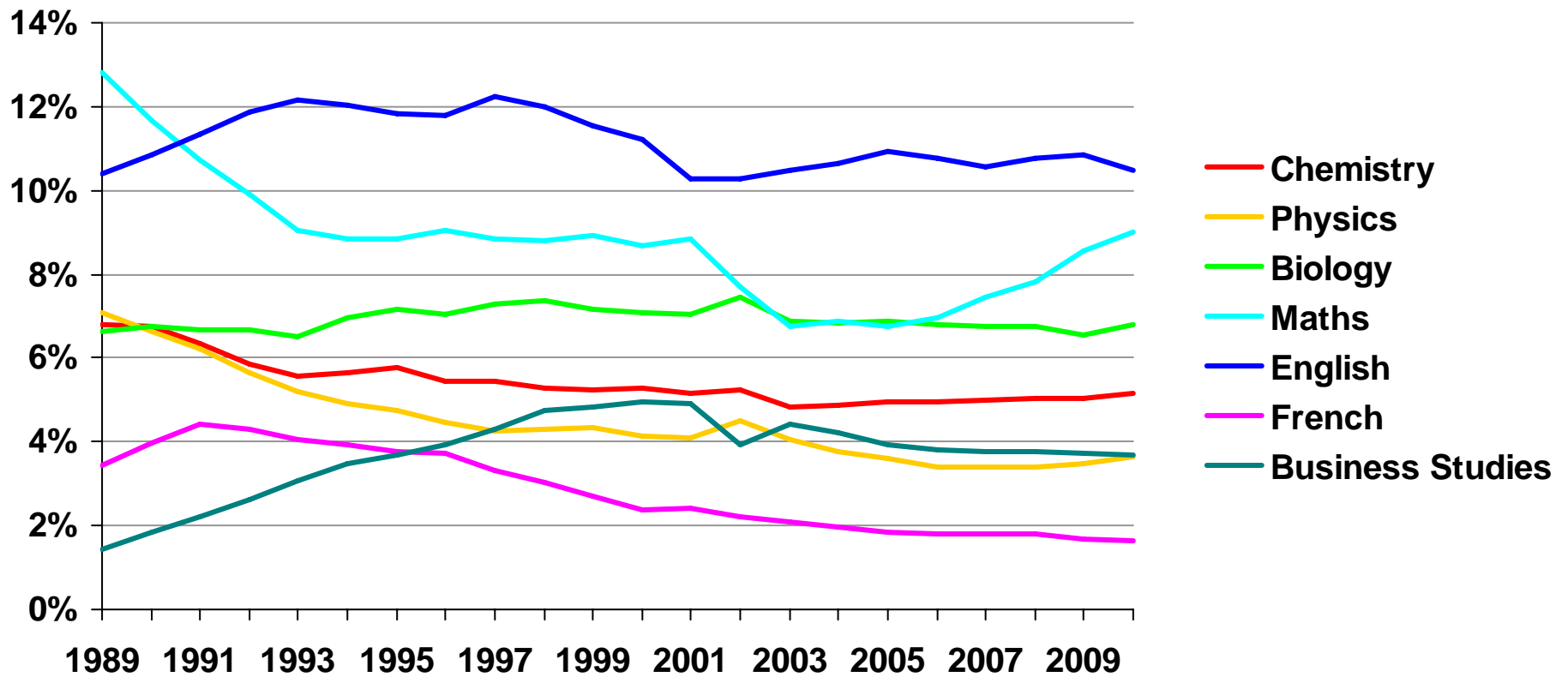
The above figures have been translated in to the following table showing the A-level entries as a percentage of the 18 year old population of England, Wales and Northern Ireland. With the increased number of A Level subject choices available to students, there is a slight decrease in the percentage studying a number of the A Level subjects shown.

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Chemistry	6.8	6.8	6.4	6.4	6.3	6.7	7.1	6.6	6.4	6.3	6.1
Physics	7.1	6.6	6.2	6.2	5.9	5.8	5.8	5.3	5.0	5.0	5.0
Biology	6.6	6.8	6.2	7.3	7.4	8.2	8.8	8.7	8.6	8.5	8.2
Maths	12.8	11.7	6.7	10.8	10.3	10.5	10.8	11.1	10.4	10.3	10.3
English	10.4	10.8	10.7	13.0	13.8	14.3	14.5	14.2	14.4	13.7	13.3
French	3.4	4.0	11.3	4.7	4.6	4.7	4.6	4.5	3.9	3.4	3.1
Business Studies	1.4	1.8	2.24.4	2.9	3.5	4.1	4.5	4.8	5.1	5.4	5.6

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Chemistry	5.3	5.2	5.2	4.8	4.9	5.0	4.8	5.0	5.0	5.0	5.2
Physics	4.2	4.1	4.5	4.1	3.8	3.6	3.4	3.4	3.4	3.5	3.6
Biology	7.1	7.0	7.4	6.9	6.8	6.9	6.8	6.8	6.8	6.6	6.8
Maths	8.7	8.9	7.7	6.7	6.9	6.8	7.0	7.5	7.8	8.6	9.0
English	11.2	10.3	10.3	10.5	10.7	11.0	10.8	10.6	10.8	10.9	10.5

French	2.4	2.4	2.2	2.1	1.2	1.9	1.8	1.8	1.8	1.7	1.6
Business Studies	5.0	4.9	4.0	4.4	4.2	3.9	3.8	3.8	4.0	3.7	3.7

A Levels as percentage of total:

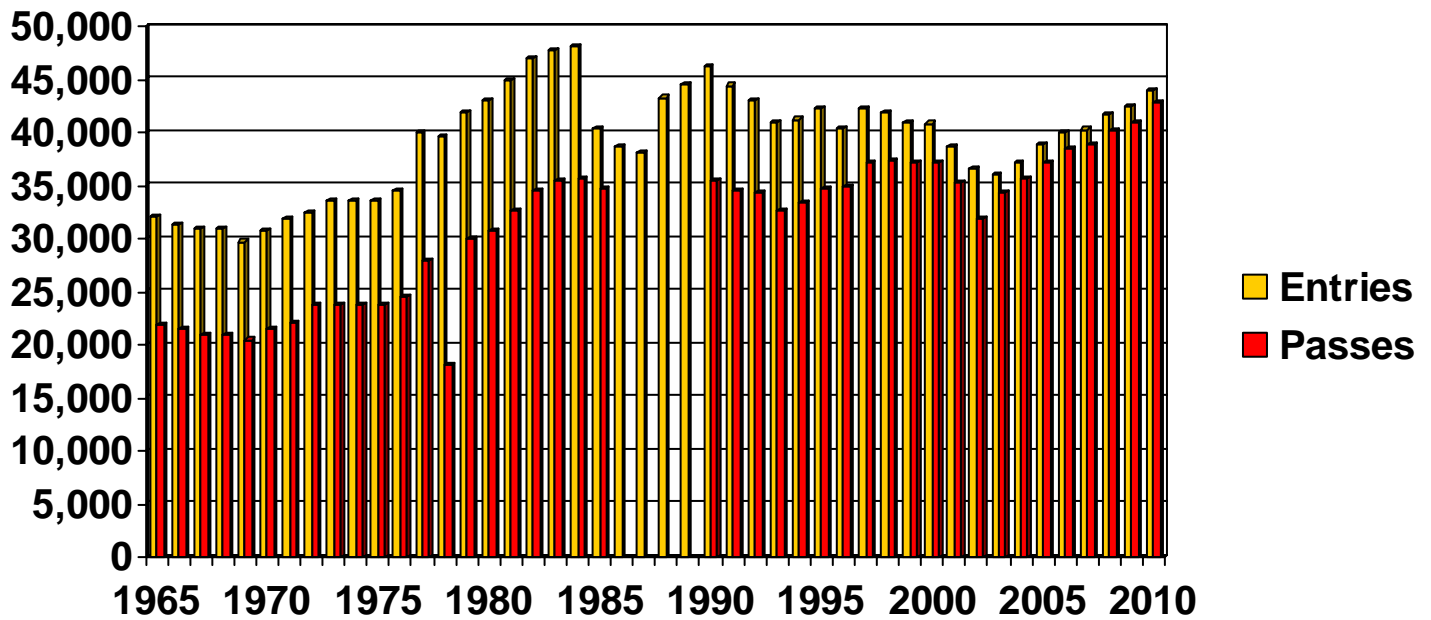


Chemistry long term 1965- 2010:

Year	Number of entries	Number of passes	% of Passes
1965	32,017	21,810	68.1%
1966	31,314	21,582	68.9%
1967	31,023	20,966	67.6%
1968	30,883	20,971	67.9%
1969	29,722	20,475	68.9%
1970	30,770	21,437	69.7%
1971	31,963	22,158	69.3%
1972	32,371	23,736	73.3%
1973	33,598	23,782	70.8%
1974	33,656	23,741	70.5%
1975	33,637	23,828	70.8%
1976	34,558	24,508	70.9%
1977	39,948	27,948	70.0%
1978	39,651	18,079	45.6%
1979	41,857	30,086	71.9%
1980	42,973	30,797	71.7%
1981	44,850	32,592	72.7%
1982	47,035	34,557	73.5%
1983	47,792	35,417	74.1%
1984	48,068	35,712	74.3%
1985	40,337	34,650	85.9%
1986	38,770		
1987	38,078		
1988	43,314		
1989	44,593		
1990	46,197	35,550	77.0%
1991	44,440	34,579	77.8%
1992	42,967	34,343	79.9%
1993	40,975	32,719	79.9%
1994	41,231	33,456	81.1%
1995	42,293	34,689	82.0%
1996	40,418	34,878	86.3%
1997	42,262	37,199	88.0%
1998	41,893	37,317	89.1%
1999	40,920	37,126	90.7%
2000	40,856	37,138	90.9%
2001	38,602	35,321	91.5%
2002	36,648	31,883	87.0%

2003	36,110	34,341	95.1%
2004	37,254	35,689	95.8%
2005	38851	37142	95.6%
2006	40064	38502	96.1%
2007	40285	38835	92.1%
2008	41680	40221	92.7%
2009	42491	41004	96.5%
2010	44051	42774	97.1%

A Level Entries and Passes 1965-2010



ADVANCED SUPPLEMENTARY EXAMINATIONS

The total entry at AS is less than 5% of that at A-level.

The number of entries for AS chemistry remains small, however, this is expected to change with the introduction of Curriculum 2000 and changes towards AS (Advanced Subsidiary) and A2 papers.

Number of AS entries

	1992	1993	1994	1995	1996	1997	1998
Chemistry	951	1006	1066	1140	1484	1728	1776
Physics	1556	1627	1590	1658	2021	2293	2271
Biology	2362	2839	2997	2844	3374	3644	3399
Maths	10642	9774	9994	9839	13880	13670	12478
English	2758	3102	3101	2835	2360	2440	1827
French	3167	3175	3168	2967	2774	2318	2474
Business Studies	2125	2491	2682	2320	2212	2538	2848
Total Entries in all Subjects	52973	54023	54737	53723	60654	66585	67304

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Chemistry	935	45605	46586	48166	49951	50855	52835	54157	58473	62232
Physics	850	38996	36921	36700	35828	36258	37323	38129	41955	45534
Biology	1431	67295	67845	70035	71346	72246	73572	72239	79112	83408
Maths	8136	67268	67212	62098	68178	70805	77387	84613	103312	112847
English	465	93504	96428	99690	100515	99591	104222	106184	107124	109411
French	950	22377	21663	20514	20913	20321	20747	19167	19122	18096
Business Studies	612	42968	43891	4.823	40696	40378	40681	42452	43594	41930

SCOTTISH HIGHER GRADE

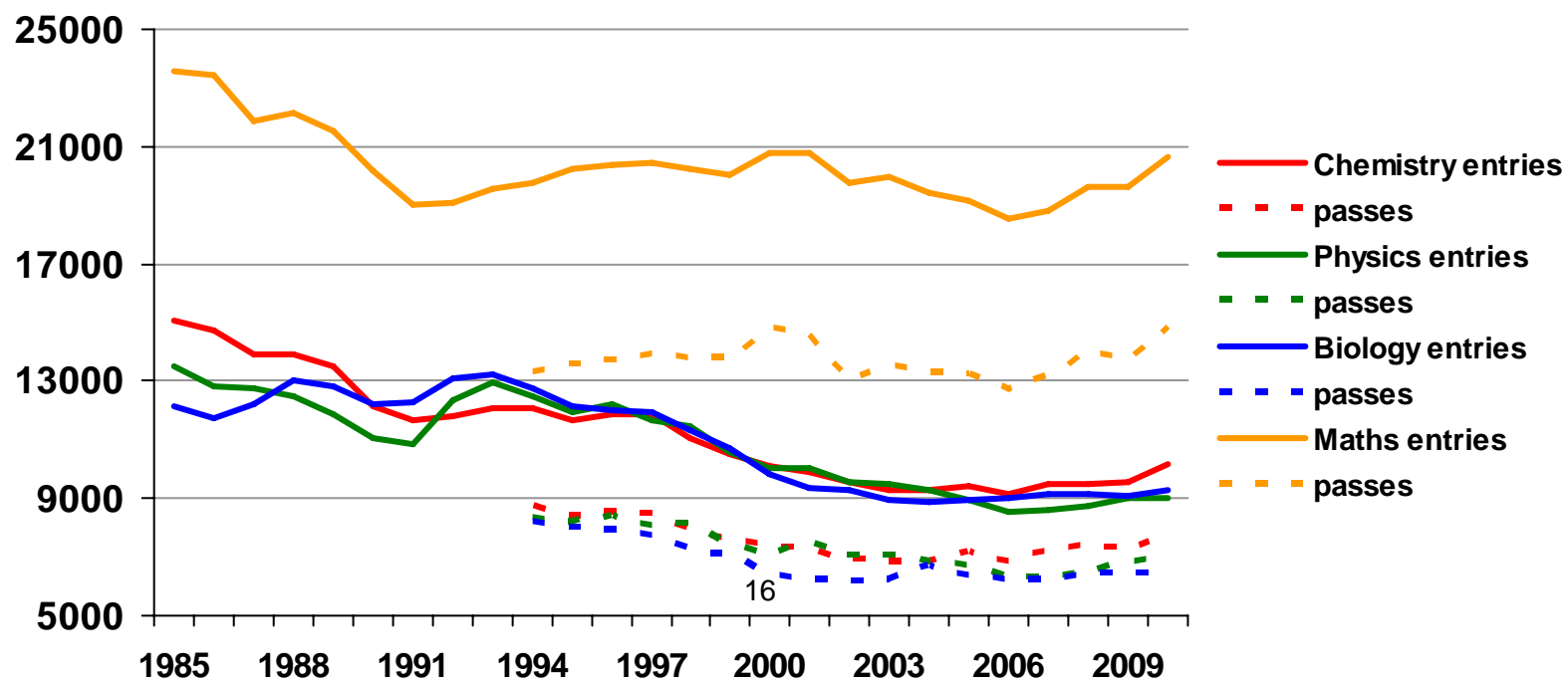
The number of **all entries** for Higher Grade has increased since 1992. The number of entries for Higher Grade **chemistry** increased until 1995. Since then there is a decreasing trend.

Number of Higher Grade entries

	1993	1994	1995	1996	1997	1998	1999
Chemistry	12092	12108	11651	11880	11876	11070	10489
Physics	12931	12464	11952	12225	11680	11448	10560
Biology	13201	12739	12140	11979	11921	11346	10729
Maths	19555	19751	20262	20375	20469	20221	20038
English	34790	34271	33955	34441	34989	34153	33551
Total entries in all subjects	159533	160602	160925	164701	167257	163777	160909

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Chemistry	Entries	10103	9923	9560	9292	9271	9405	9128	9489	9500	9578	10177
	passes	7383	7222	6871	6812	6831	7169	6858	7239	7347	7260	7744
Physics	Entries	10029	10039	9580	9489	9286	8951	8565	8580	8762	9001	9014
	passes	7.48	7518	7008	7050	6856	6685	6284	6264	6496	6841	7022
Biology	Entries	9863	9352	9274	8920	8852	8941	8995	9169	9130	9104	9291
	passes	6412	6217	6157	6194	6725	6385	6198	6218	6417	6446	6420
Maths	Entries	20782	20779	19790	19966	19394	19173	18533	18786	19633	19631	20654
	passes	14796	14559	13055	13473	13284	13229	12706	13154	14063	13683	14891

Scottish Highers: Entries and Passes:



Summary of the education data

In the main, the recent data has largely provided a continuation of the trends seen previously.

GCSE

The increase in separate subject science GCSEs (Chemistry, Physics, Biology) or “triple science” has continued since 2008. The main proportion of scientific GCSEs are still GCSE Science and GCSE Additional Science, however these numbers have declined over the last 2 years.

As a proportion of the number of candidates, over 20% of candidates now take “triple award” science GCSEs, an increase of 12% from 2007.

A-Levels

Pass rates have continued to increase and in 2010 were 97.1% for chemistry, just below the total average of 97.5% across all subjects.

The number of students taking chemistry is the highest it's been since 1992, however as a proportion of the subjects studied the percentage has remained at ~5% for the past 10 years.

Scottish Highers

Numbers of chemistry students have been slowly increasing since 2006 and are still higher than both biology and physics, by around 10%.

Tertiary Education

The number of applications to chemistry in 2009 continued the increase in applications, while value for 2009 acceptances to chemistry dropped slightly.

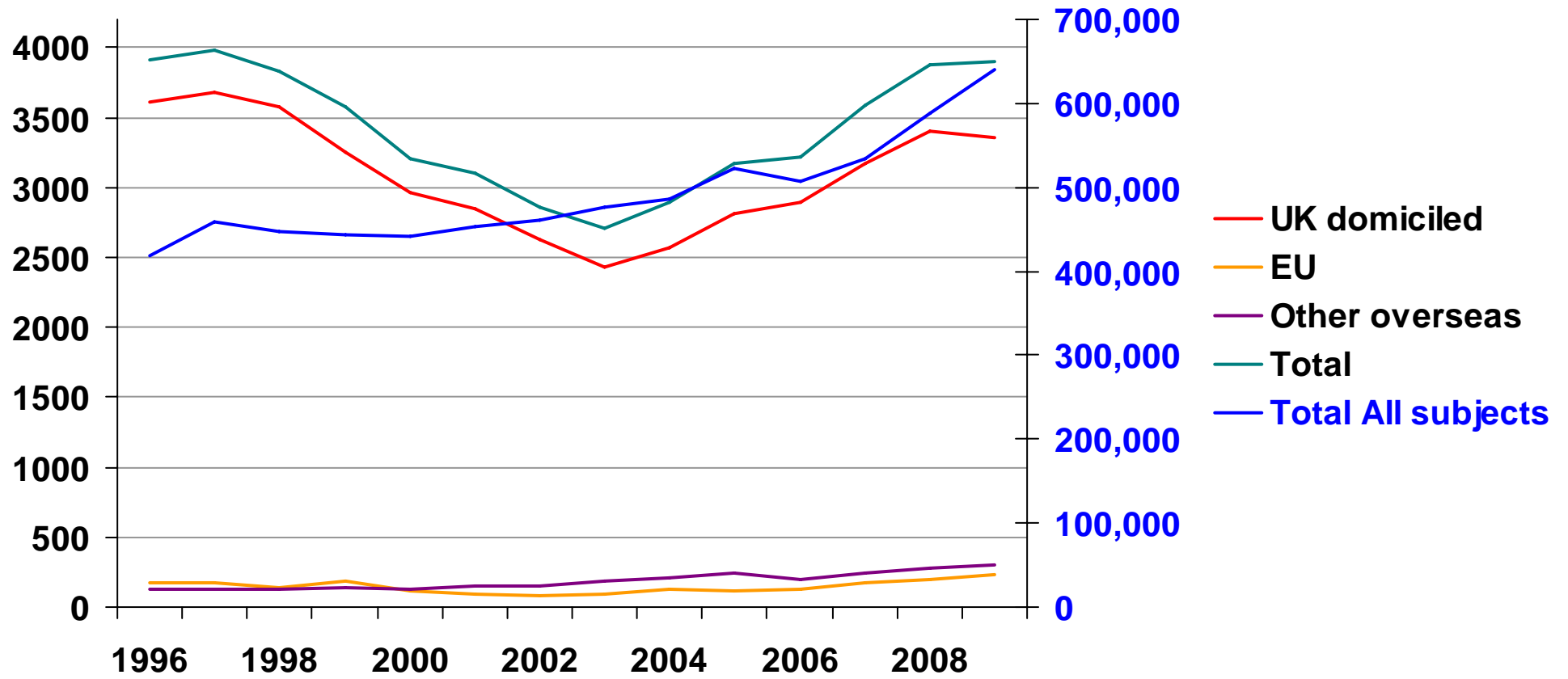
The overall trend still remains an increasing one (from 2003).

The numbers of those taking chemistry may be increasing, but as a proportion of total subjects taken it has fallen by 1/3.

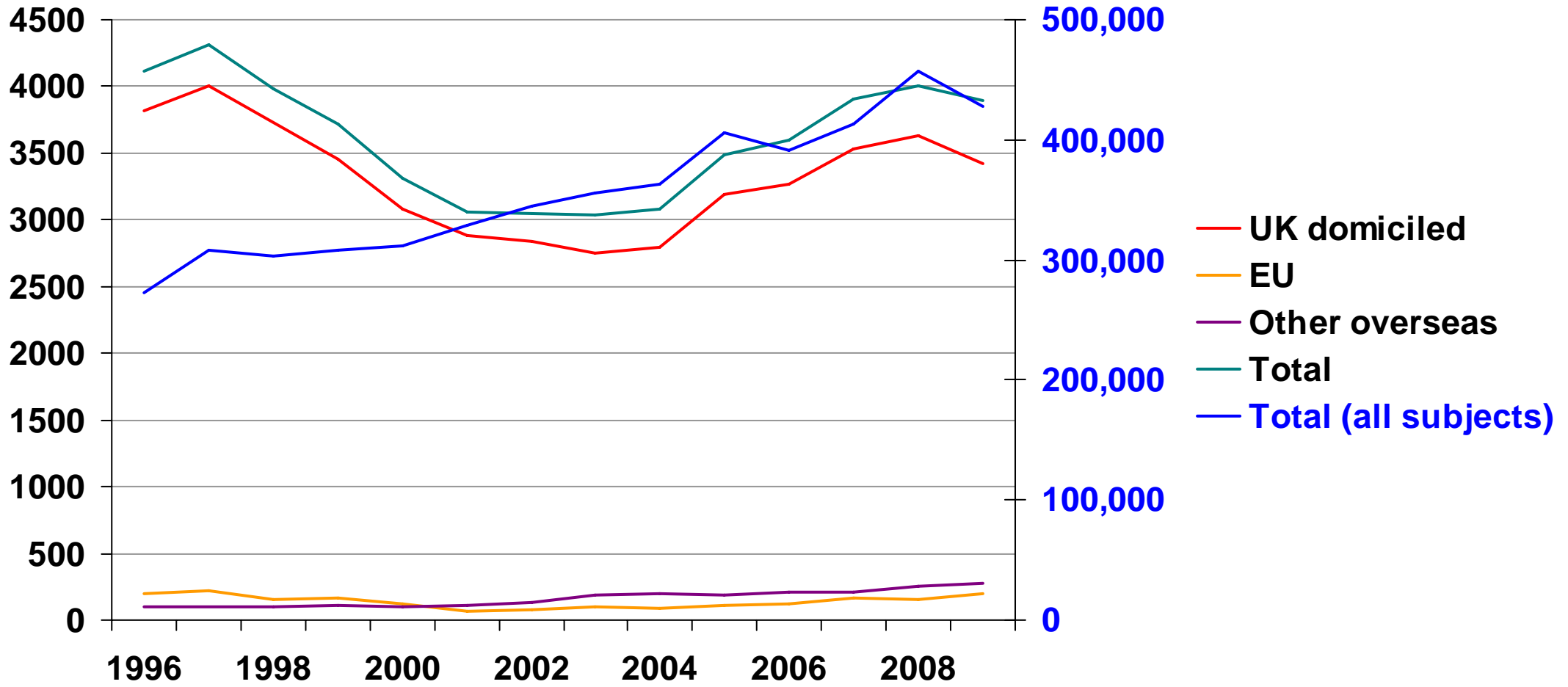
Global tertiary education

The UK is above the OECD average for tertiary education attainment (and therefore higher than Germany, Greece and Italy); however we are lower than Spain, US, France, Sweden and Japan.

**Chemistry Degrees:
HE: Applications to study Chemistry**



HE: Acceptances to Study Chemistry



THE POPULARITY OF CHEMISTRY DEGREES

The number of students accepted to study for chemistry degrees has mainly decreased since 1994 both in absolute terms and as a proportion of the 18 year old population.

The UCCA and PCAS figures for 1989-93 are quoted as total applicants for up to five institutions/courses and not by preferred subject.

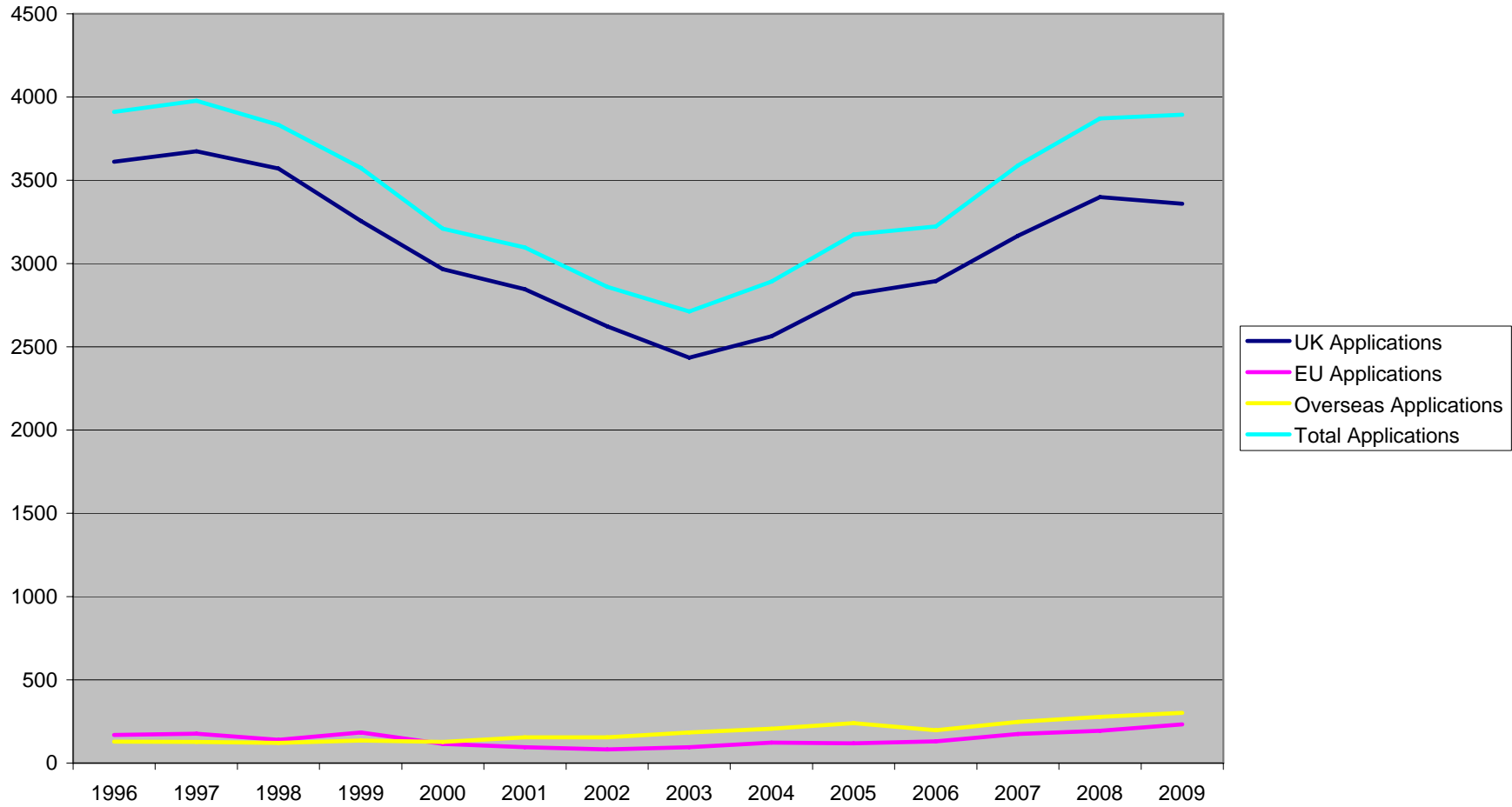
The number of home applicants and acceptances for 1994-1998 are combined under the UCAS scheme. Under this scheme each applicant may make a maximum of up to six different courses/institutions. For 1994 and 1995 entry, each applicant was permitted up to eight applications. For 1994-1998 those applicants who were made one or more offers and who accepted one such offer are counted as accepted applicants. For applications, the numbers relate to the applicant's preferred subject.

Total Home Applications

	Applications to UCCA (University)			Applications to PCAS (Polytechnic)		
	Chemistry	Total	% of Total	Chemistry	Total	% of Total
1989	17825	783619	2.3	6239	486989	1.3
1990	18517	863029	2.1	6820	543552	1.2
1991	17845	913011	1.9	7251	617736	1.1
1992	17661	1032899	1.7	8204	821560	1.0
1993	17283	1118423	1.5	8314	856389	1.0

	Applications to UCAS		
	Chemistry	Total	% of Total
1994	4104	365323	1.1
1995	3995	369701	1.1
1996	3612	364885	0.99
1997	3674	398327	0.92
1998	3571	389588	0.92
1999	3256	388691	0.84
2000	3209	442028	0.76
2001	3097	453833	0.71
2002	2860	461365	0.65
2003	2713	476467	0.59
2004	2892	486028	0.62
2005	3174	522155	0.63
2006	3222	506304	0.67
2007	3589	534495	0.7
2008	3871	588689	0.67
2009	3894	639860	0.61

UCAS Applications to Chemistry

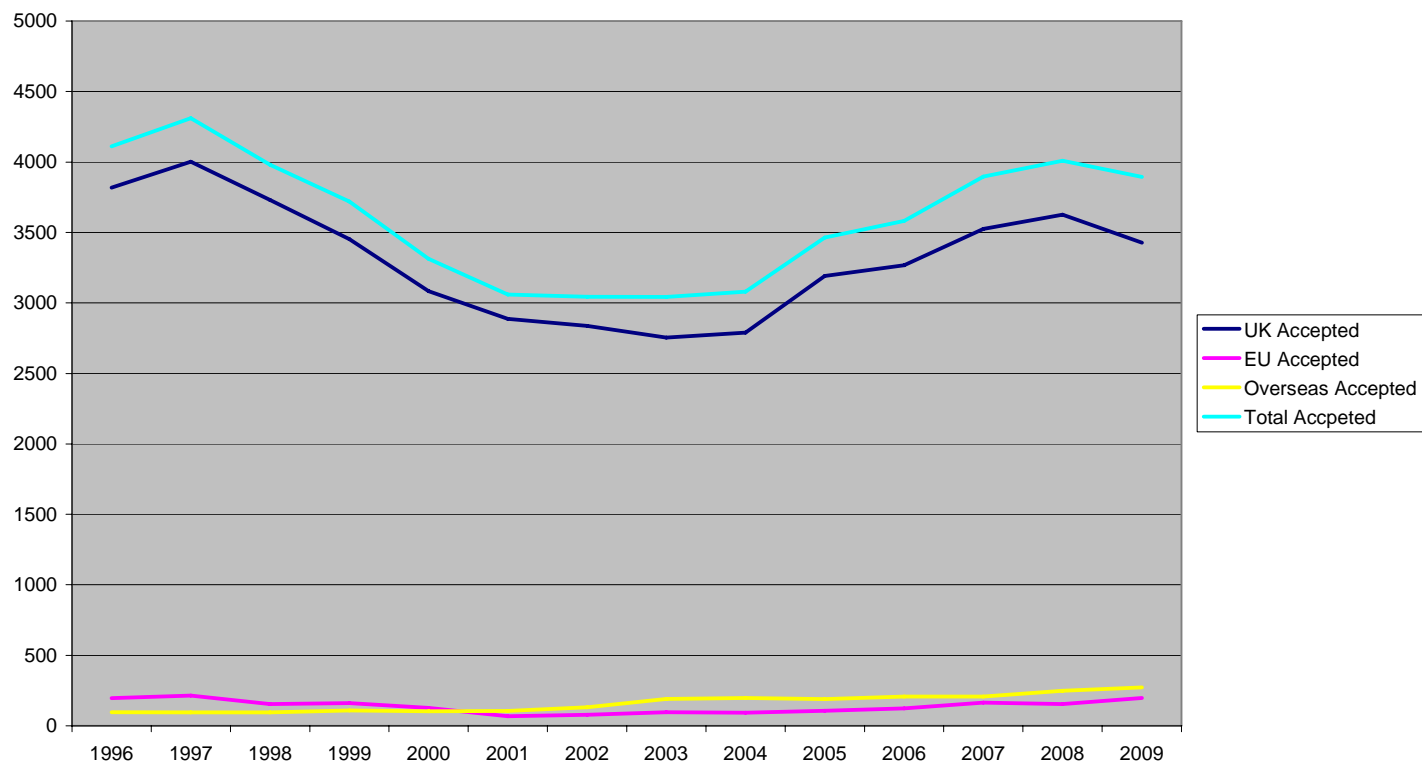


Total Home Acceptances:

	Chemistry UCCA	Chemistry PCAS	Total Chemistry	Total (All Subjects)	% of total due to chemistry	% of all 18 year olds
1989	3028	544	3572	133211	2.7	0.41
1990	3177	595	3772	158791	2.4	0.45
1991	3209	631	3853	182367	2.1	0.49
1992	3169	768	3937	218843	1.8	0.54
1993	3300	810	4110	247872	1.6	0.58
1994			3989	228685	1.7	0.59
1995			3911	240710	1.6	0.60
1996			3818	246503	1.5	0.57
1997			4003	276503	1.4	0.55
1998			3731	272340	1.4	0.50
1999			3452	277340	1.2	0.46
2000			3312	311635	1.1	
2001			3059	329218	0.9	
2002			3045	344581	0.9	
2003			3042	355531	0.9	
2004			3080	362985	0.8	
2005			3464	405369	0.9	
2006			3583	390890	0.9	
2007			3897	413430	0.9	

2008			4009	456627	0.9	
2009			3895	427901	0.9	

UCAS Accepted Chemistry Places



ACTIVITIES FOR SCHOOLS AND COLLEGES

The Royal Society of Chemistry is active in a variety of ways of benefit to schools and colleges. These include:

Careers Information

Advice and a range of materials are available free of charge — *eg* careers booklets and posters *etc* for careers events.

Education in Chemistry

A copy of this RSC magazine is sent free six times a year to every secondary school and college in the UK.

Schools and Colleges Publication Service

By subscription (£60.00 UK, £75.00 elsewhere) schools and colleges can receive a wide range of quality resource material from around the world, and overseas journals, on a regular basis.

Symposia for teachers

A number of one-day symposia are held around the country each year. These are based in research or industry and enable teachers to update their skills, or learn new ones.

Careers conferences

These are one-day conferences held around the country focusing on topical issues in chemical education and illustrating careers in chemistry.

Industry Study Tours

Over a short residential period, teachers see chemical processes in industrial settings in the UK, Ireland and mainland Europe, and are able to explore many of the issues involved.

Management Workshops

These are three-day residential courses that are aimed at prospective heads of department. The courses comprise workshops on a variety of management skills required in a modern school science department.

Summer Schools For Teachers

A series of week long residential courses throughout the UK are available for teachers to enhance their awareness of recent developments in, and applications of, chemistry.

Curriculum projects: Discover Projects

The Society lends support to a number of initiatives, offering expertise and finances to produce and disseminate curriculum resources

Chemistry at Work

The Society organises a number of three-day events all over the UK. 1000-1200 students visit each one, attending a morning or afternoon session and

visiting about six companies during that time. Each of the companies gives a 20 minute presentation — lectures, demonstrations, videos, experiments *etc* — showing how chemistry studied at school is applied in industry.

Top of the Bench

Teams of four students from schools in each of the Society's Local Sections are chosen each year to compete in a variety of activities to find the UK's *Top of the Bench* team.

Bill Bryson

Competition for primary and secondary schools

International Chemistry Olympiad

Each year the Society organises the selection of a team of four to represent the UK at the final of the Chemistry Olympiad competition. The team then visits the host country to mix with, and compete against, teams from all over the world.

Teacher Fellowship

The Society seconds a teacher each year for 12 months to develop major projects and activities. Past Fellows have produced resource materials for teachers at a variety of levels.

Further details of these activities can be obtained from:

The Education Department
The Royal Society of Chemistry
Thomas Graham House
Science Park, Milton Road
Cambridge CB4 0WF

Tel: 01223 432221
E-mail: education@rsc.org
www.rsc.org

CATEGORIES OF RSC MEMBERSHIP

The following outlines the different categories of membership and is intended as a guide only, as flexibility exists to allow for different but equivalent qualifications or experience.

Student

For those taking approved courses to prepare for professional membership.

Associate

Open to all those who have an interest in the advancement of chemical sciences, including those qualified in disciplines other than chemistry.

Licentiate (LRSC)

Open to those with

- i) a pass or third class approved honours degree in pure or applied chemistry; or
- ii) a pass in the LRSC examination.

Graduate (GRSC)

Open to those with

- i) an approved first or second class honours degree in pure or applied chemistry or certain combined honours courses; or
- ii) an equivalent qualification.

Member (CChem MRSC)

The main category of professional membership. This is open to those who satisfy the academic requirements for Graduateship and have, since graduation, gained approved experience in the practice, application or teaching of chemistry.

Fellow (CChem FRSC)

This is the senior category of professional membership for chemists of established reputation who have achieved maturity and senior responsibility.

European Chemist (EurChem)

This is awarded to chemists who are members of participating national chemistry societies. Candidates must satisfy the academic qualifications for Graduateship and have a minimum of three years approved post-graduation professional experience.

SOURCES AND COMMENTS

GCSE

Source: Qualifications and Curriculum Authority (QCA)

These data cover UK entries from England, Wales and Northern Ireland only, not overseas candidates.

A-level/AS Examination

Source: Qualifications and Curriculum Authority (QCA)

These data cover examination results of the GCE boards in England, Wales and Northern Ireland only, not overseas candidates.

Scottish Higher Grade

Source: Scottish Qualifications Authority (SQA)

These data cover all candidates at Scottish Higher Grade.

Applications and Admissions to Higher Education

Source: Universities and Colleges Admissions Service (UCAS)

These data cover home applicants only.

The application counts are the number of times that each subject appears - *ie* the number of choices not the number of applicants.

Further applications through CAP and clearing are not included but acceptances are.

Graduate Qualifications

Sources: Higher Education Statistics Agency (HESA)
The Royal Society of Chemistry

Links to other web sites

Useful statistical information can also be found on;
<http://www.dfes.gov.uk/datasphere/>