Institute of Physics in Ireland

A Statistical Picture of Physics in Ireland

Physics at Second Level

Republic of Ireland Leaving Certificate Examination Statistics
N. Ireland Advanced Level Examination Statistics

Physics at Third Level

Courses in Physics in Ireland
Staff Employed in Physics Departments
Research and Development Personnel in Higher Education in Ireland

Some Employers of Physics Graduates
First Destination of Physics Graduates

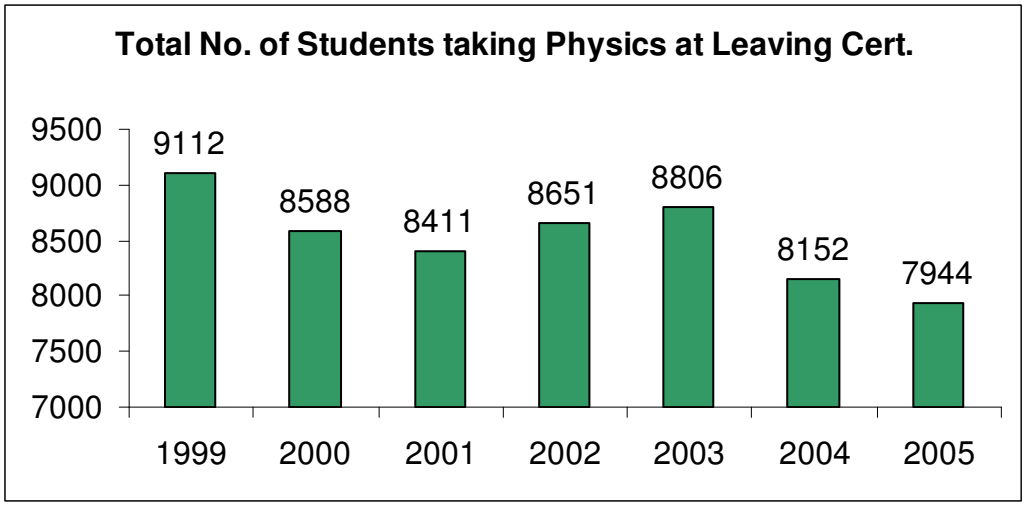
Research Funding

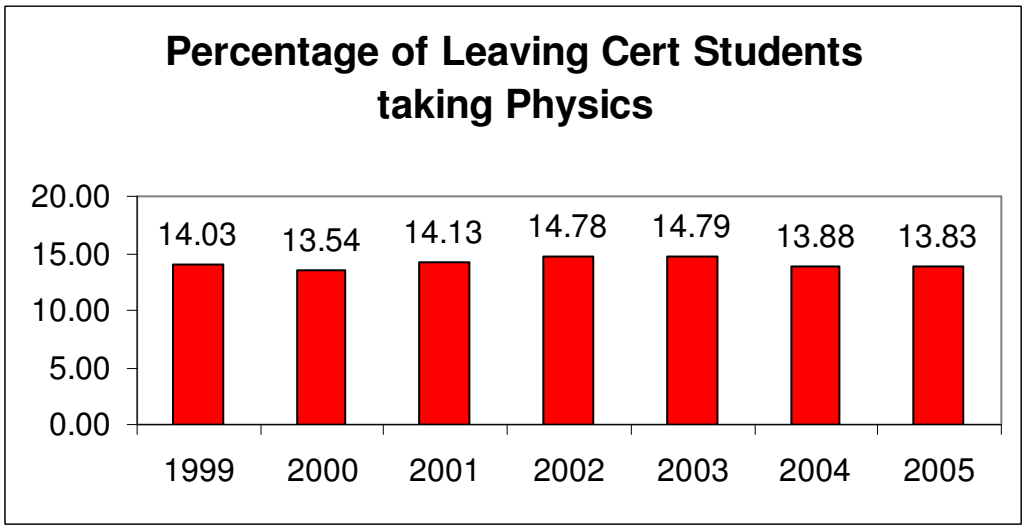
Expenditure on Research in Irish Higher Education Sector
Embark Initiative Postdoctoral Fellowship Scheme
North-South Research Programme
Programme for Research in Third Level Institutes
Science Foundation Ireland

Physics at 2nd Level

Republic of Ireland
Leaving Certificate Students

Data obtained from State Examinations Commission





Leaving Certificates Results Physics Higher Level
Percentage Breakdown of Candidates by Grade

Year	A1	A2	B1	B2	B3	C1	C2	C3	D1	D2	D3	E	F	NG
2001	7.5	7	7.8	8.7	8.8	9	8.2	8.9	7.9	6.6	9.2	6.8	3	0.6
2002	6.6	7	7.4	8.4	9.7	8.5	8.8	11.1	4.9	6.7	10.5	7.1	3	0.4
2003	9.7	8.2	7.9	7.8	8.7	8.3	7.9	7.7	7.7	6.3	8.7	7.6	2.9	0.6
2004	11.4	7.7	11.2	9.4	9	9.2	7.4	7.5	6.4	5.6	7.5	5.5	1.8	0.4
2005	10.6	9.8	9.4	9.9	9	7.5	7.2	8.2	5.9	6	7.6	5.8	2.6	0.4

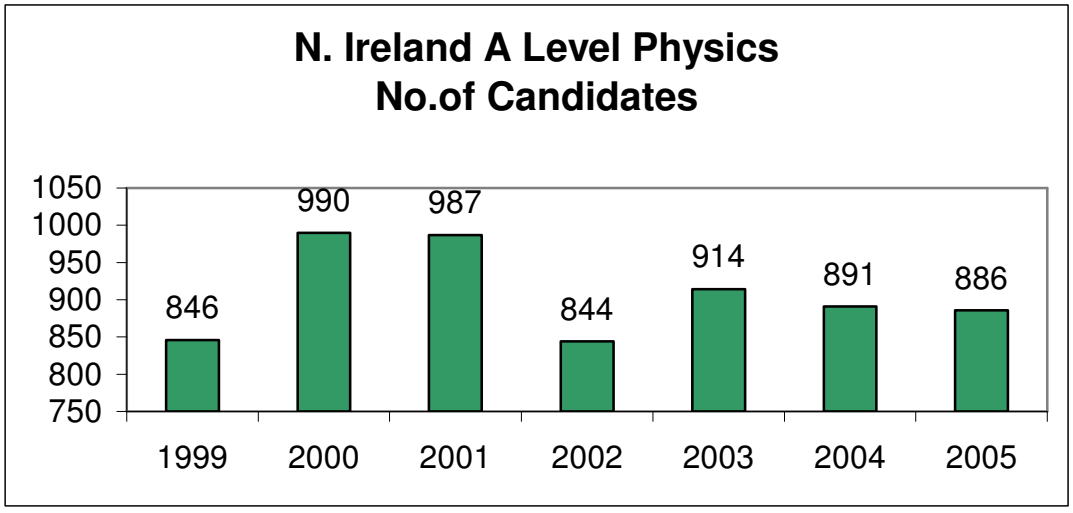
Leaving Certificate Results 2004 – Percentage Breakdown of Candidates by Grade Awarded in Each Subject, Higher Level Papers

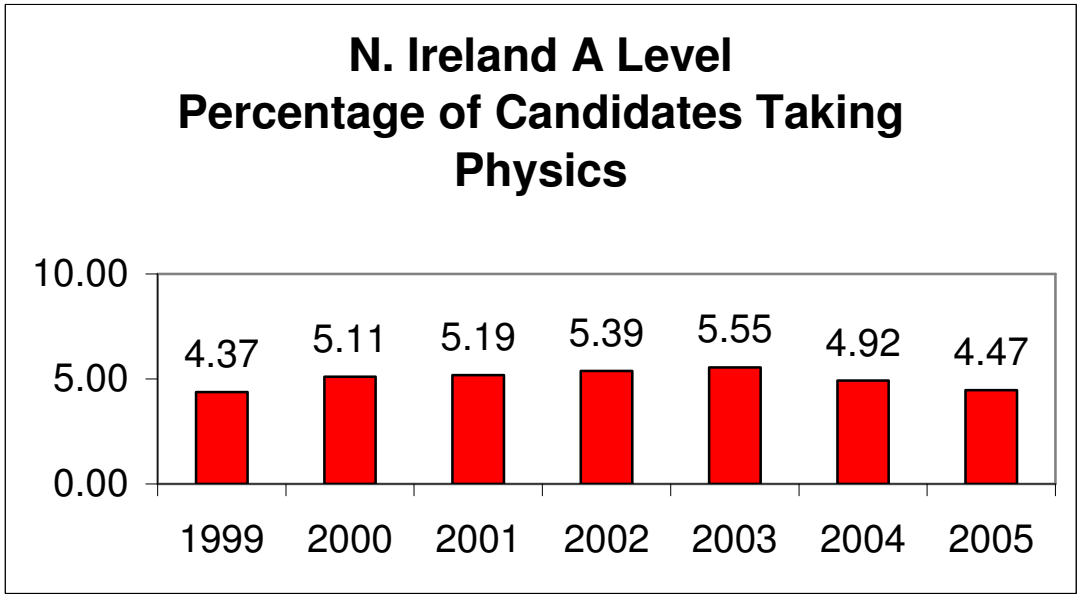
Subject	**Total No.**	A1	A2	B1	B2	B3	C1	C2	C3	D1	D2	D3	E	F	NG
Irish	14,876	4.4	6.5	9	11.9	12.9	13.6	13	11.9	8.4	4.9	2.9	0.7	0	0
English	32,469	4.8	5.8	6.1	9.3	12.3	12.7	13.9	12.4	11	6.2	4.1	1.1	0.1	0
Mathematics	9,426	8.8	7.4	8.9	10.1	10.9	10.7	10.5	10	7.6	5.9	4.9	3.2	0.9	0.1
History	6,678	8.2	5.7	8.4	9.3	10.9	10.2	9.7	10.1	6.6	6.3	7.3	4.6	1.9	0.7
Geography	21,745	2.8	4.8	5.7	9.7	12	11.9	12.9	12.5	9.3	7.3	6.6	3.9	0.5	0.1
Latin	116	14.7	9.5	12.1	13.8	15.5	10.3	6.9	4.3	2.6	5.2	2.6	2.6	0	0
Ancient Greek	15	0	13.3	6.7	6.7	0	20	0	13.3	33.3	0	6.7	0	0	0
Classical Studies	685	2.8	5	6.3	9.8	12	8.6	9.2	11.8	6.3	7.6	7.7	8.8	3.9	0.3
French	15,164	5.9	5.8	7.3	8.6	10	10	12.2	11.7	9.9	8.2	6.9	3.3	0.2	0
German	4,983	7.7	7	9	10.5	11.6	11.7	11.6	10.2	8.3	6.2	4.5	1.6	0.2	0
Spanish	1,012	10.6	7.3	7.1	9.2	9.1	11.7	11.5	9.6	10.7	5.4	5.6	1.9	0.4	0
Italian	115	19.1	9.6	8.7	11.3	12.2	9.6	4.3	8.7	7	5.2	4.3	0	0	0
Art	7,239	1	3.4	6.8	11.3	14.5	15.5	14.4	12.5	9.6	5.7	3.7	1.2	0.1	0.1
Applied Mathematics	1,357	20.3	9	9	8	8.4	7	6.7	7.4	4.2	5.7	5.2	5.5	2.5	1.1
Physics	**5,836**	**11.4**	**7.7**	**11.2**	**9.4**	**9**	**9.2**	**7.4**	**7.5**	**6.4**	**5.6**	**7.5**	**5.5**	**1.8**	**0.4**
Chemistry	6,205	12.8	10.2	10	10.7	9.4	8.3	7.5	7.1	5.7	5	5.6	5.6	1.9	0.3
Physics & Chemistry	**604**	**6.6**	**6.6**	**6.3**	**10.3**	**9.9**	**8.9**	**9.6**	**8.3**	**6.5**	**7.9**	**10.9**	**4.5**	**3**	**0.7**
Agricultural Science	2,270	6.7	5.6	7.5	9.2	10.7	10.4	11.9	9.2	8.8	7.1	7.5	5	0.4	0
Biology	16,011	7.1	8.5	8.3	9.6	10.8	8.7	9.3	9.9	6.8	6.5	7.1	5.8	1.4	0.2
Agricultural Economics	120	5.8	5	5	4.2	6.7	11.7	5	10	5.8	7.5	14.2	13.3	5.8	0
Engineering	3,501	2.2	5.7	8.1	10.6	11.7	13.1	11.4	11.1	10	6.3	5.6	3.8	0.5	0
Technical Drawing	3,153	6.2	7.9	9.7	10.7	10	10.4	10.3	9.6	8.2	5.7	5.8	4.4	1	0
Construction Studies	6,609	1.7	5	8.1	12.4	14.1	14.1	14.6	10.6	7.8	5.2	3.7	2.3	0.3	0
Home Economics - S &S	10,537	1.3	3.8	6.4	10.2	12.7	13.4	14.2	12.9	10	6.9	5.2	2.6	0.4	0
Accounting	4,858	9.4	11.6	11.8	11.5	10.5	8.1	8.2	7.7	5.1	4.2	5.7	4.5	1.4	0.4

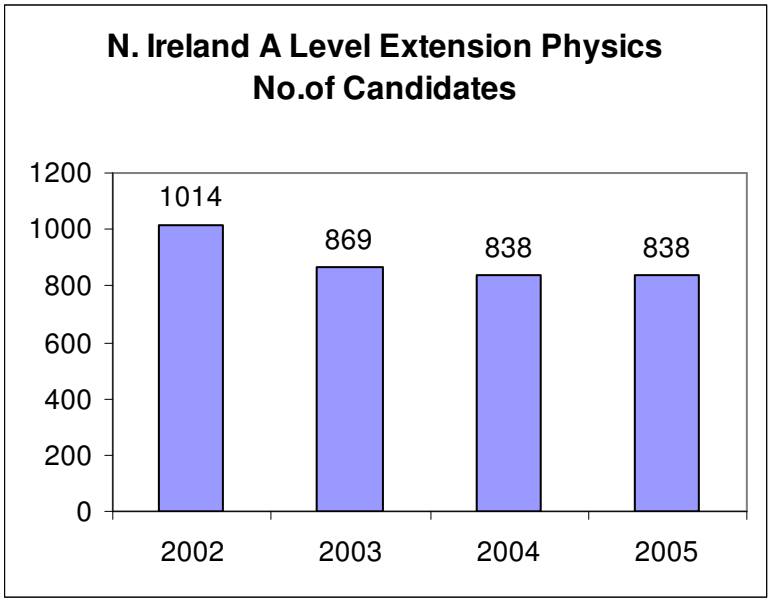
Business	15,030	3.8	6.9	6.7	9.6	12.8	9.8	10.9	11.3	7.2	7	7.8	4.7	1.3	0.2
Economics	3,809	4	8.2	8.8	11.1	11.3	8.9	8.8	9.4	6.9	6.8	9.5	4.8	1.5	0.1
Economic History	284	1.8	5.6	3.9	11.6	18	13	9.9	11.3	6	7	4.9	3.5	2.1	1.4
Arabic	135	7.4	19.3	12.6	16.3	14.8	6.7	7.4	5.2	3	2.2	3.7	0.7	0.7	0
Music	3,871	2.9	8.8	15.6	19.5	18.4	14.5	9.7	5.1	3	1.4	0.6	0.4	0.1	0
Russian	73	65.8	13.7	5.5	4.1	4.1	0	1.4	1.4	1.4	1.4	0	1.4	0	0
Japanese	28	25	14.3	14.3	7.1	3.6	3.6	10.7	3.6	14.3	0	0	3.6	0	0

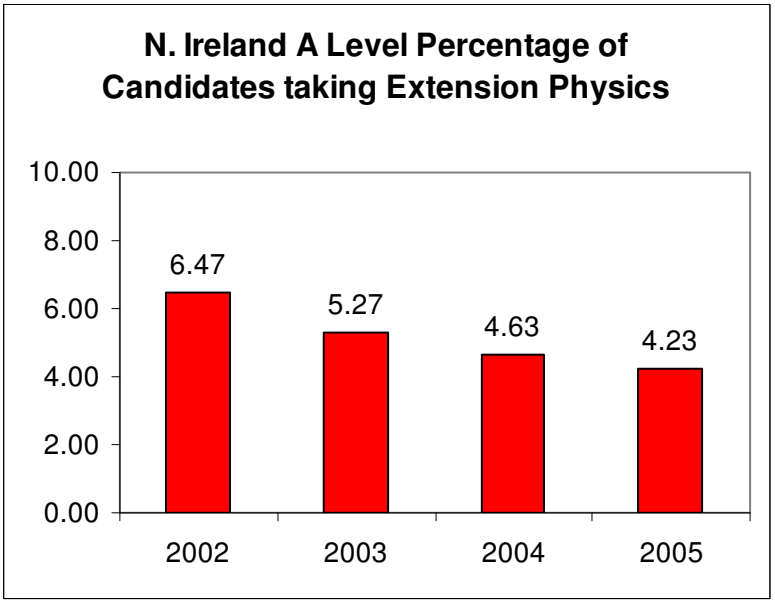
N. Ireland Advanced Level Examinations

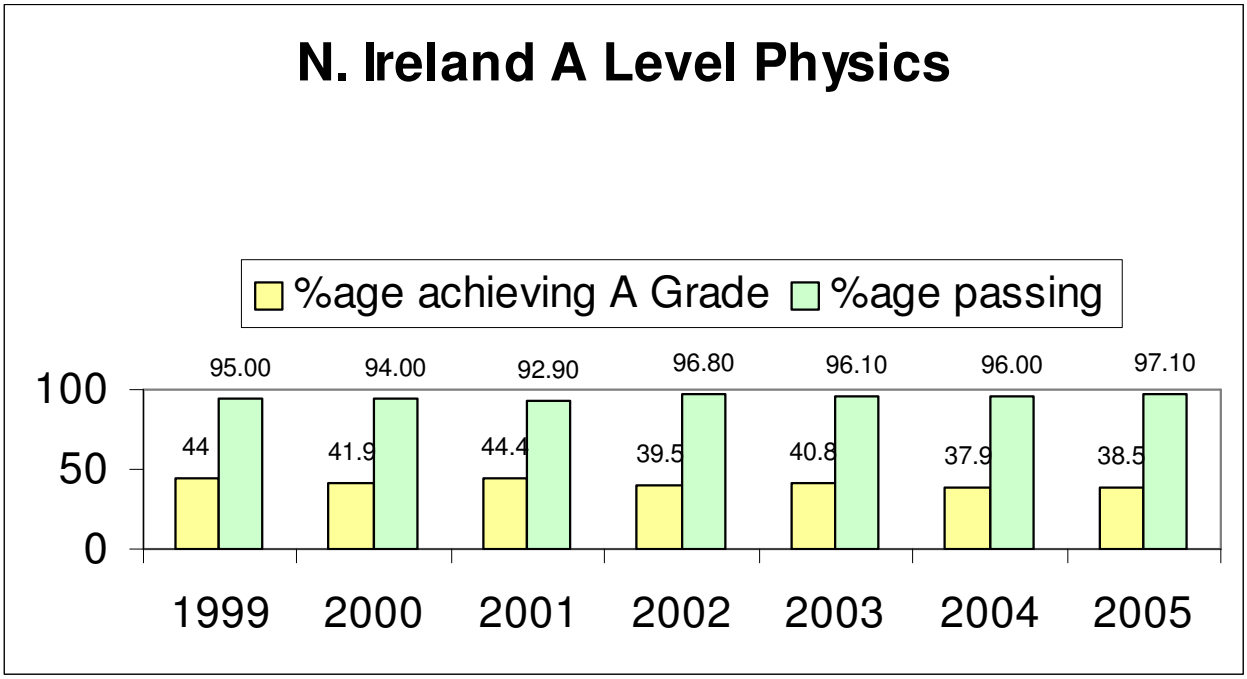
Reference: Council for Curriculum Examinations and Assessment

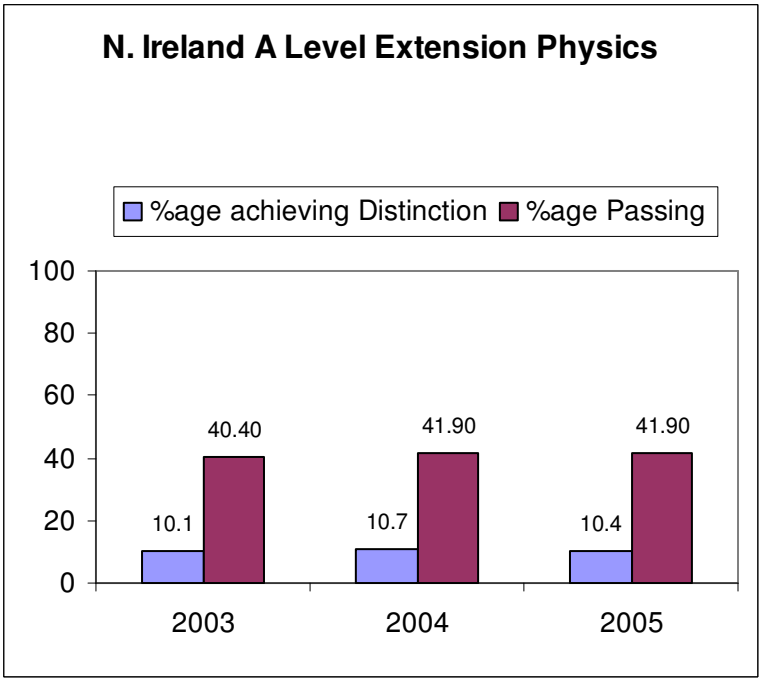


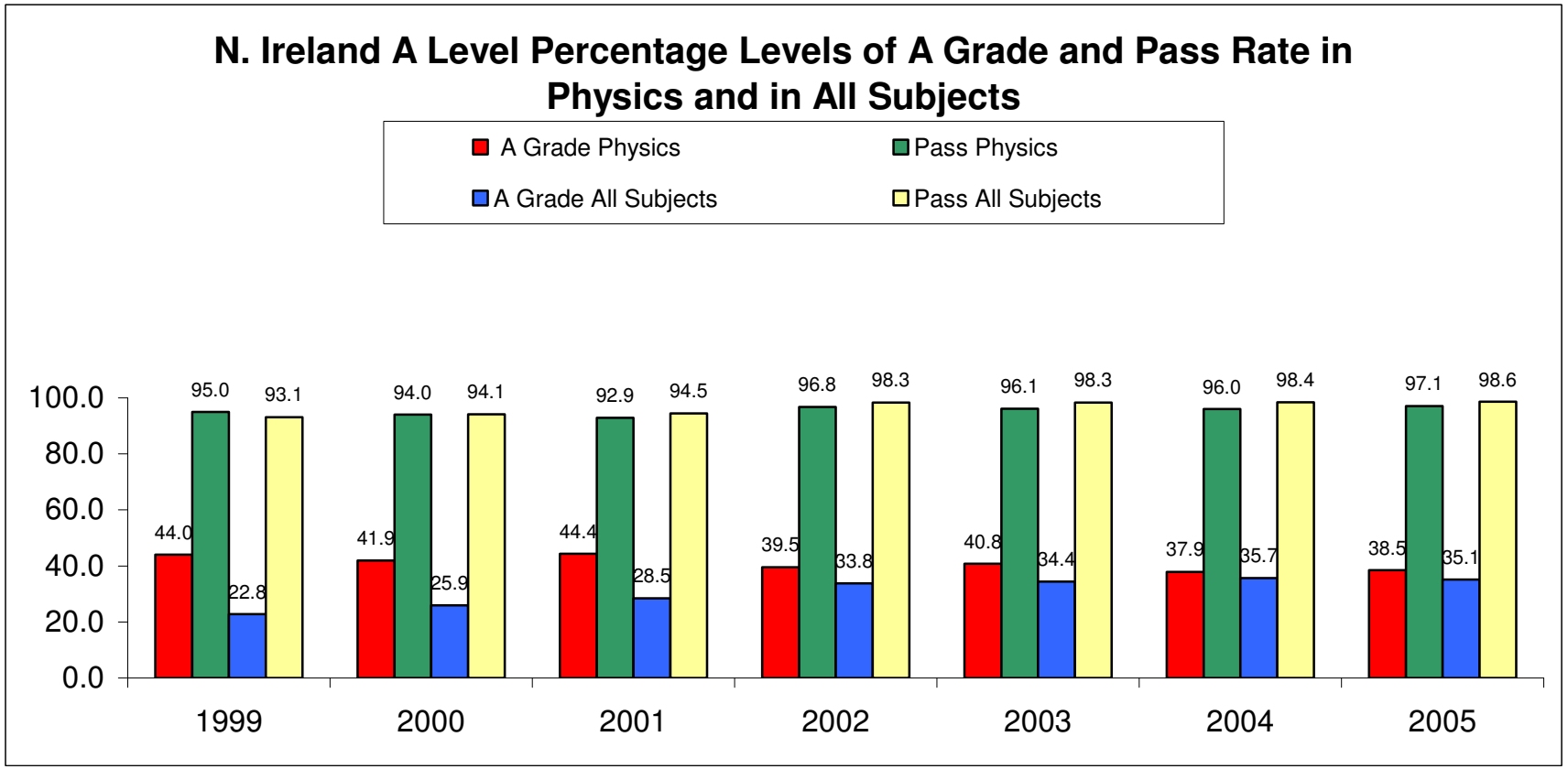



N. Ireland A Level Extension Physics
No.of Candidates
1200
1000
800
600
400
200
0
1014
869
838
838
2002
2003
2004
2005


N. Ireland A Level Percentage of
Candidates taking Extension Physics
10.00
8.00
6.00
4.00
2.00
0.00
6.47
5.27
4.63
4.23
2002
2003
2004
2005


N. Ireland A Level Physics
%age achieving A Grade
%age passing
100
50
0
95.00
94.00
92.90
96.80
96.10
96.00
97.10
44
41.9
44.4
39.5
40.8
37.9
38.5
1999
2000
2001
2002
2003
2004
2005


N. Ireland A Level Extension Physics
%age achieving Distinction
%age Passing
100
80
60
40
20
0
40.40
41.90
41.90
10.1
10.7
10.4
2003
2004
2005


N. Ireland A Level Percentage Levels of A Grade and Pass Rate in Physics and in All Subjects
A Grade Physics
Pass Physics
A Grade All Subjects
Pass All Subjects
100.0
80.0
60.0
40.0
20.0
0.0
44.0
95.0
22.8
93.1
41.9
94.0
25.9
94.1
44.4
92.9
28.5
94.5
39.5
96.8
33.8
98.3
40.8
96.1
34.4
98.3
37.9
96.0
35.7
98.4
38.5
97.1
35.1
98.6
1999
2000
2001
2002
2003
2004
2005

Physics at Third Level

Courses in Physics offered at the following Institutions

Belfast Queen's University Belfast	BSc and MSci (3/4 years)
	Physics
	Physics with Astrophysics
	Physics with Applied Maths
	Physics with Extended Studies in Europe
	Theoretical Physics
	Computer Science and Physics
Cork, University College Cork	BSc
	Physics
	Astrophysics
	Education for Physical Sciences
	Physics and Mathematics
	Physics and Applied Mathematics
Dublin, Dublin City University	BSc
	Applied Physics
	Physics with Astronomy
	Science Education
	Science International
	Physics with French/German
	Environmental Science and Health
Dublin, Trinity College Dublin	BA
	Theoretical Physics
	Physics and Chemistry
	Advanced Materials
	Physics
Dublin, University College Dublin	BSc
	Experimental Physics
	Mathematical Physics
	Astrophysics
	Geophysics
	General Science
	Theoretical Physics
	Astrophysics and Space Science
Galway, NUI Galway	BSc
	Experimental Physics
	Applied Physics and Electronics
	Physics and Astronomy
	Mathematics and Mathematical Physics
	Applied Maths and Physics
Limerick, University of Limerick	BSc
	Applied Physics
	(Education) Physical Sciences
Maynooth, NUI Maynooth	BSc
	Experimental Physics
	Theoretical Physics
	Experimental Physics with Theoretical Physics
	Physics with Astrophysics
	Exp Phys or Theoretical Phys with one of

	Maths, Biology, Chemistry, Computer Science
	Theoretical Physics and Mathematics
IT Carlow	Higher Certificate in Computer Networking and Optical Communications
Cork IT	BSc and Higher Certificate
	Applied Physics and Instrumentation
	Computerised Instrument Systems
Dublin, DIT	BSc Physics Technology
	BSc Clinical Measurement
	BSc Ordinary Physical and Life Sciences
	BSc Physics with Medical Physics and Bioengineering
Galway GMIT	Higher Certificate and BSc
	Physics and Instrumentation
Tralee, IT Tralee	Higher Certificate and BSc Ordinary Photonics
Waterford, WIT	BSc in Physics with Computing

Survey of Research and Development in the Irish Higher Education Sector 2004
Data obtained from the S&T Indicators Unit, Forfas, December 2005

R&D personnel (full-time equivalent) by field of science 2004

Field of Science	Academic Staff	Post Doc Fellows	Contract Lecturers	Research Assistants	Technicians	Admin Staff	Other	**Total FTE**
Maths and Computer Sciences	162	78	68	69	8	10	4	**399**
Physical Sciences	**64**	**75**	**27**	**89**	**21**	**11**	**2**	**289**
Chemical Sciences	62	80	12	37	19	5	2	**217**
Earth & related environmental sciences	28	30	5	20	8	4	4	**99**
Biological Sciences	106	204	47	211	68	17	17	**670**
Civil Engineering	36	8	10	16	8	2	1	**81**
Electrical Engineering, electronics	69	39	7	40	13	2	3	**173**
Other engineering sciences	185	111	25	155	38	8	2	**524**
Basic Medicine	67	100	21	39	97	24	3	**351**
Clinical Medicine	71	55	34	47	13	16	1	**237**
Health Sciences	87	8	28	44	5	30	1	**203**
Agriculture	21	6	0	9	7	1	0	**44**
Veterinary medicine	15	5	3	20	10	1	0	**54**
Psychology	27	17	10	17	3	4	0	**78**
Economics	41	7	18	10	0	1	0	**77**
Educational Services	71	3	9	14	21	15	3	**136**
Other social sciences	292	57	93	83	2	36	4	**567**
History	53	21	9	15	1	3	0	**102**
Languages and Lit.	162	23	44	7	3	7	2	**248**
Other humanities	67	18	13	11	0	2	3	**114**
Other	11	20	11	47	41	51	3	**184**
Total	1697	965	494	1000	386	250	55	**4847**

Survey was carried out during the academic year, Sept 2003 – Sept 2004

Coverage included all academic departments in the seven universities*, eleven institutes of technology** as well as the Dublin Institute of Technology, Royal College of Surgeons, St. Patrick's College Drumcondra and Mary Immaculate College.

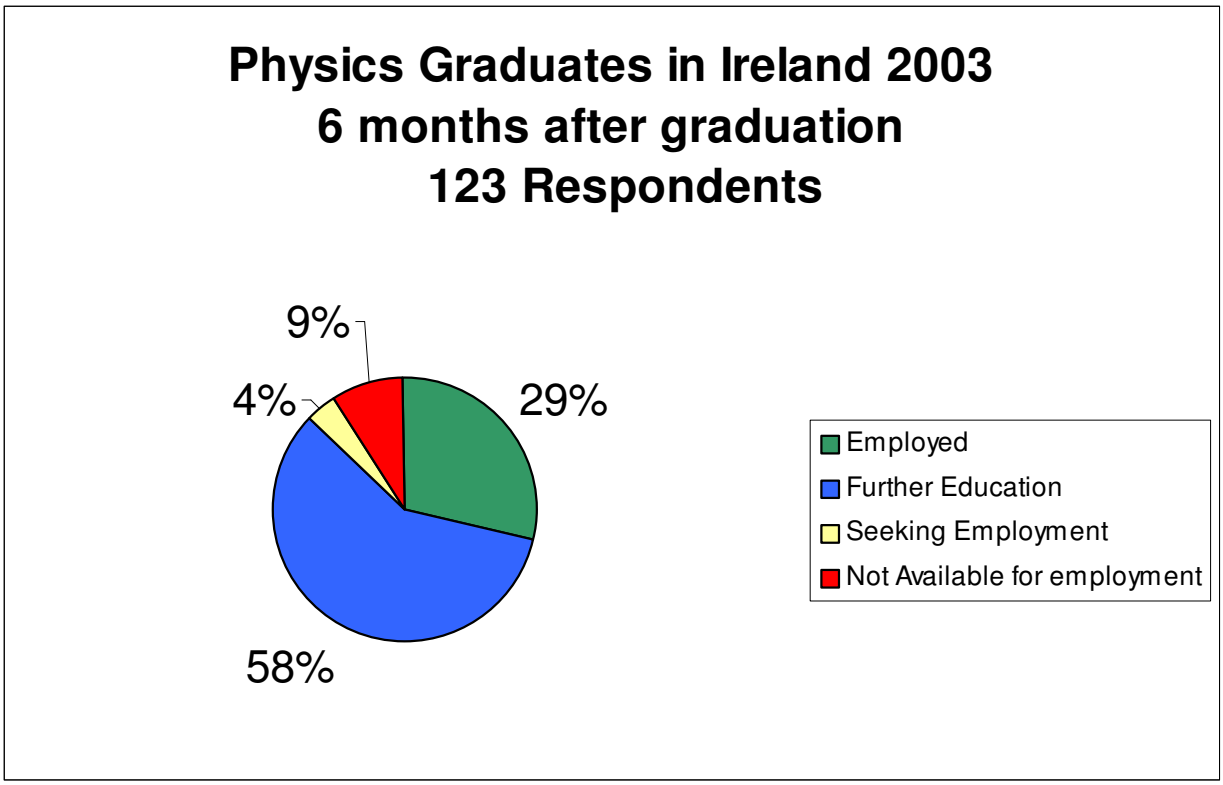
** Universities, Dublin City University, NUI Galway, NUI Maynooth, University College Cork, University College Dublin, University of Dublin (Trinity College) and University of Limerick.

**Institutes of Technology (IT): Athlone IT, Carlow IT, Cork IT, Dundalk IT, Galway-Mayo IT, Letterkenny IT, Limerick IT, Sligo IT, Tallaght IT, Tralee IT and Waterford IT

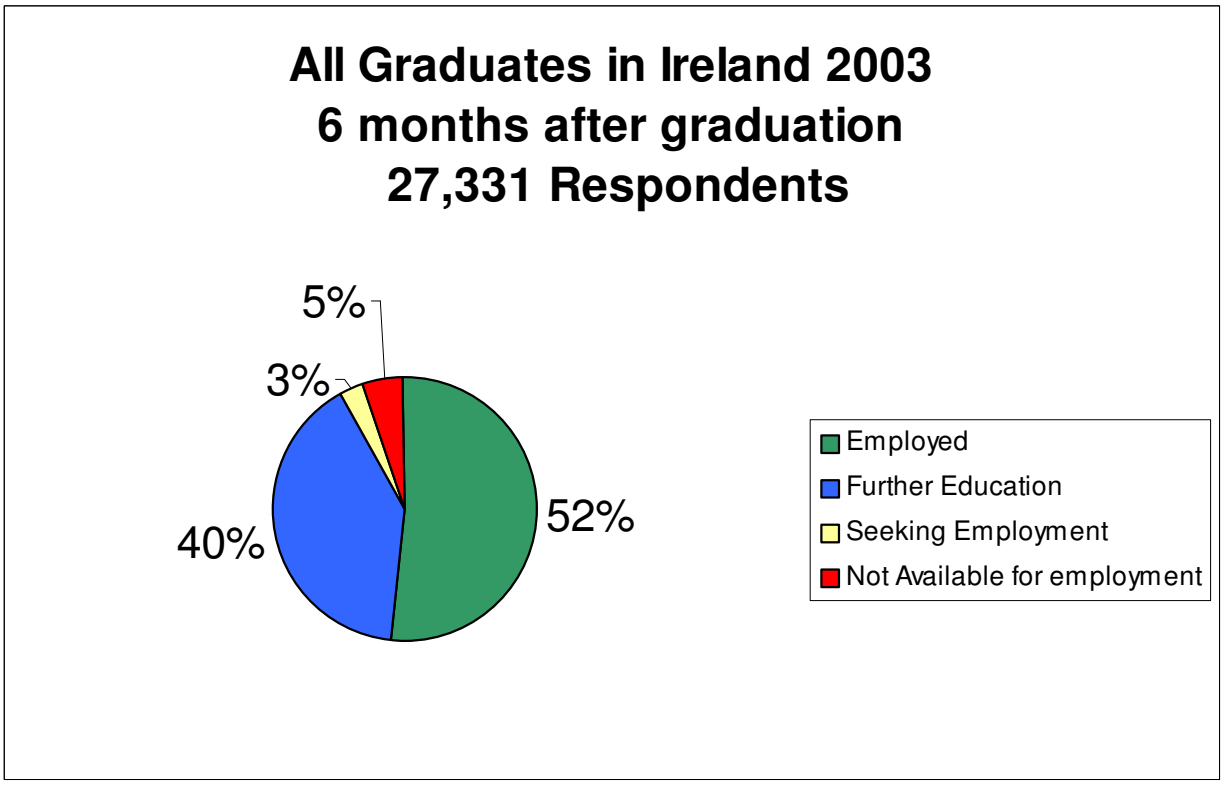
In this survey, Physical Sciences refers to Astronomy and space sciences, physics, other allied subjects

Some Employers of Physics Graduates
Compiled from First Destination of Physics Graduates Reports

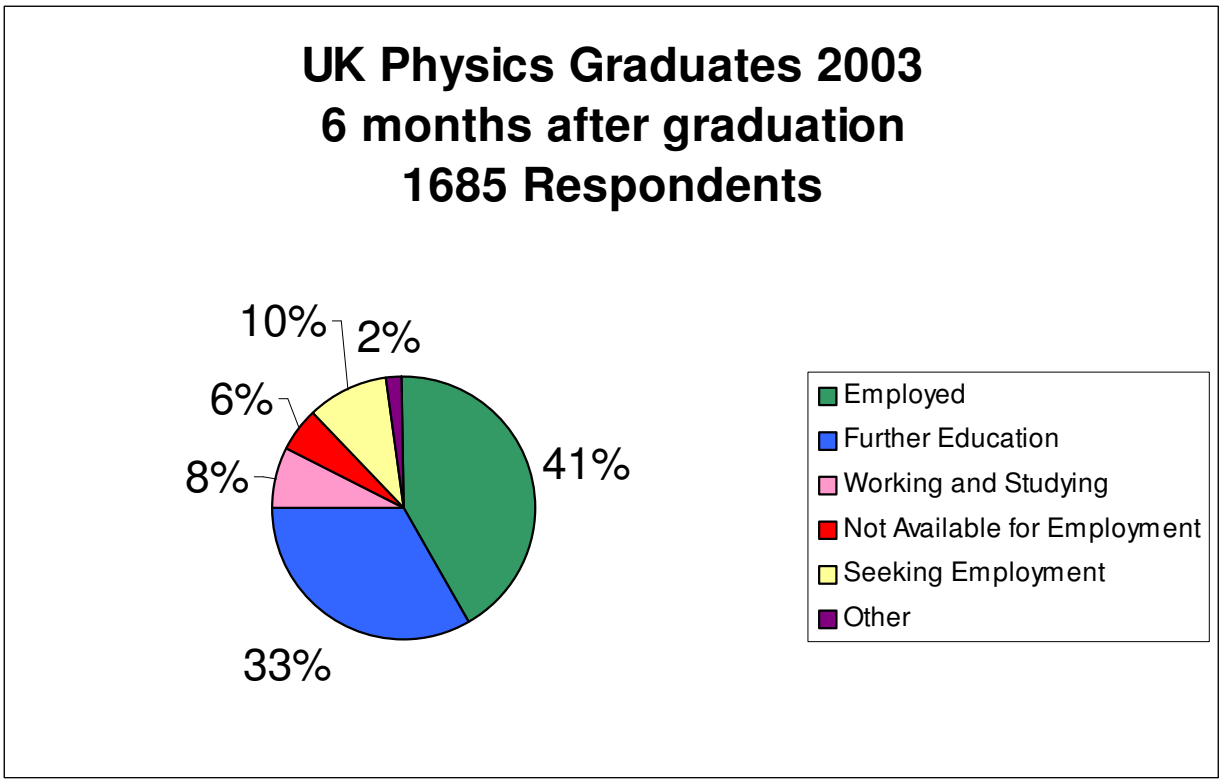
ACC Bank
Aer Lingus
Allied Irish Bank
Analog Devices
Bombardier Shorts
Bord Gais
Boston Scientific
British Telecom
Burton Hall
Conduit Europe
Dell
Dell Derry
Electronic Concepts Galway
Ericsson
Esat Digifone
Gerard Labs
Gleeson Group
Hewlett Packard
International School of Choueifat
Intel
Lucent Technologies
Mater Hospital
Mayo County Council
Medicare Galway
Medtronics
Met Eireann
Meteor
Musgraves Cash and Carry
NASA
Roadstone
Rotunda Hospital
Saxon Financials Lts
Schools
SDL Pack (Engineering
Advisors/Consultants_
Seagate
Sli Eile
St. James' Hospital
St. Luke's Hospital
The Endowment Purchasing Company
Vodafone
Xsil Ltd

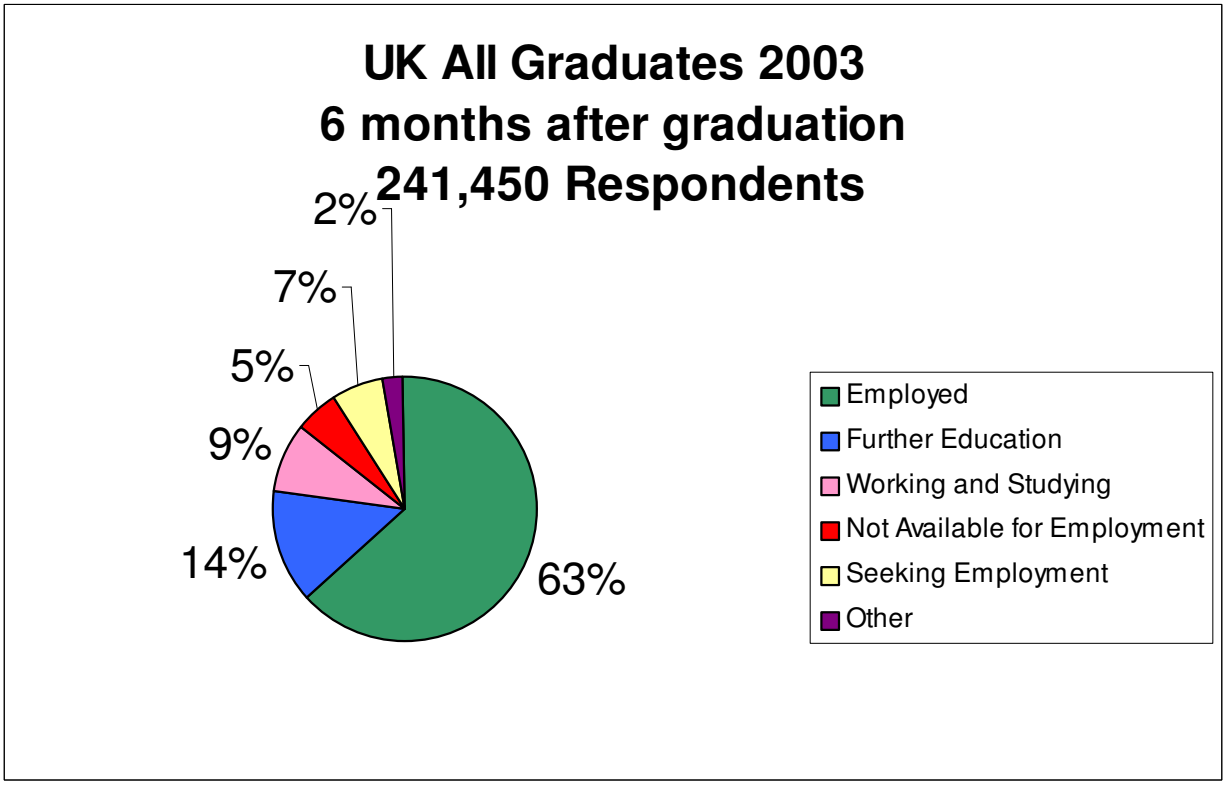


Data from the Careers Departments of UCC, DCU, TCD, UCD, NUIG, UL



Data from HEA, First Destination of Graduates Survery, 2003 (most recent available)





Data obtained from www.prospects.ac.uk

Expenditure on Research in the Irish Higher Education Sector

Reference Forfas, Survey of Research and Development in the Higher Education Sector 2004

Total Expenditure on Research in Higher Education in 2004, €491.7 million

Field of Science	**Expenditure**	**%age**
	€ '000	
Maths and Computer Sciences	42227	8.59
Physical Sciences	**34296**	**6.97**
Chemical Sciences	20364	4.14
Earth and Related environmental sci	16923	3.44
Biological Sciences	77215	15.70
Civil Engineering	8828	1.80
Electrical Engineering, electronics	23494	4.78
Other engineering sciences	49695	10.11
Basic Medicine	46531	9.46
Clinical Medicine	22291	4.53
Health Sciences	17875	3.64
Agriculture	5556	1.13
Veterinary medicine	5899	1.20
Psychology	10290	2.09
Economics	5273	1.07
Educational Services	16083	3.27
Other social sciences	50682	10.31
History	7712	1.57
Languages and Lit.	21045	4.28
Other humanities	9420	1.92
Total	491699	100.00

Expenditure on R&D in Higher Education by source of funds and field of science, 2004

Reference Forfas, Survey of Research and Development in the Higher Education Sector 2004

Field of Science	**HEA Indirect Funds**	**Direct Gov.**	**EU**	**Other foreign sources**	**Irish Industry funded**	**Other and own**	**Total**	**%age**
	€'000	€'000	€'000	€'000	€'000	€'000	€'000	
Maths and Computer Sciences	15,942	21320	1666	163	660	2476	**42,227**	**8.59**
Physical Sciences	**6980**	**21491**	**4631**	**312**	**292**	**590**	**34,296**	**6.97**
Chemical Sciences	8237	9425	932	76	912	782	**20,364**	**4.14**
Earth&Related environ. Sciences	3874	9501	1768	354	267	1159	**16,923**	**3.44**
Biological Sciences	25835	41089	4220	1418	1243	3410	**77,215**	**15.70**
Civil Engineering	4113	2500	1043	7	750	415	**8,828**	**1.80**
Electrical Engineering, electronics	7601	11575	3095	50	509	664	**23,494**	**4.78**
Other engineering sciences	11099	24875	6343	730	4338	2310	**49,695**	**10.11**
Basic Medicine	15542	24666	914	2305	1351	1753	**46,531**	**9.46**
Clinical Medicine	7981	8446	828	1603	199	3234	**22,291**	**4.53**
Health Sciences	8630	4420	155	49	498	4123	**17,875**	**3.64**
Agriculture	2923	2310	138	9		176	**5,556**	**1.13**
Veterinary medicine	3636	1884	39	102		238	**5,899**	**1.20**
Psychology	6986	1412	1055	59	49	729	**10,290**	**2.09**
Economics	4649	311	37		64	212	**5,273**	**1.07**
Educational Services	9652	3523	749		77	2082	**16,083**	**3.27**
Other social sciences	32158	9164	2020	3181	853	3306	**50,682**	**10.31**
History	5487	1158	124			943	**7,712**	**1.57**
Languages and Lit.	17272	1192	199	13	322	2047	**21,045**	**4.28**
Other humanities	6336	2600	89		151	244	**9,420**	**1.92**
Total	204,933	202862	30045	10431	12535	30893	**491,699**	**100.00**

Expenditure on R&D in Higher Education by type of costs and field of science, 2004

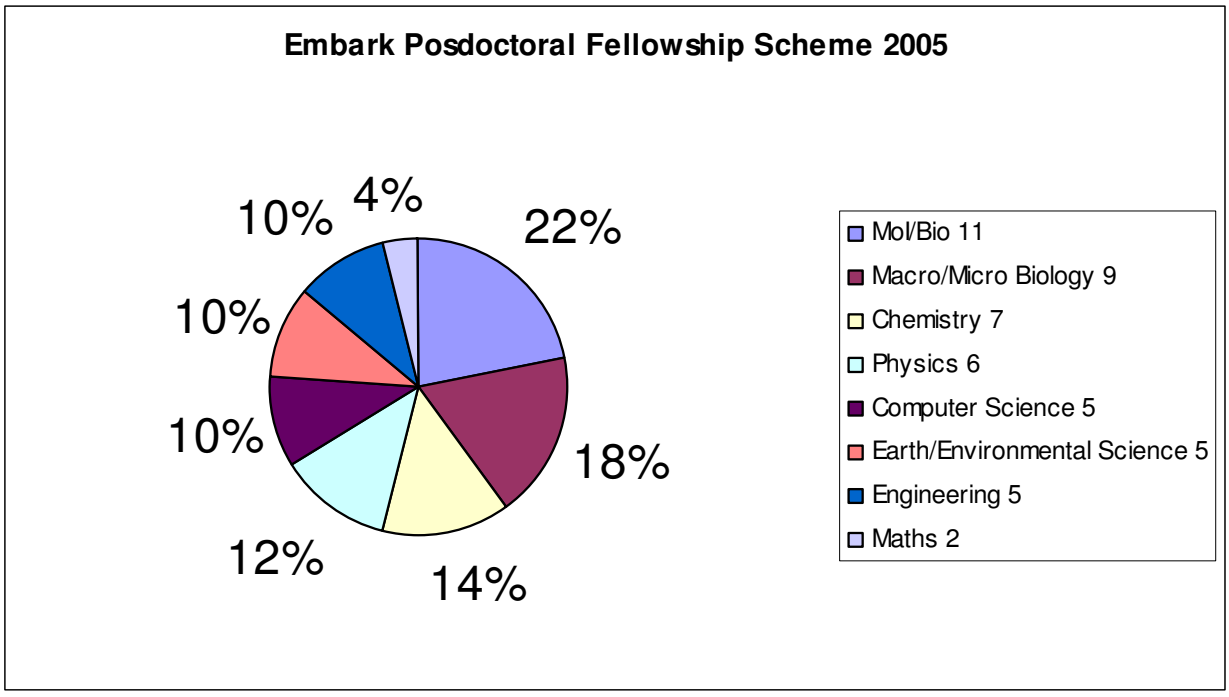
Reference Forfas, Survey of Research and Development in the Higher Education Sector 2004

Field of Science	Pay € '000	Non-pay current € '000	Capital Expenditure € '000	Total € '000
Maths and Computer Sciences	30747	8147	975	**39869**
Physical Sciences	**19868**	**9967**	**4164**	**33999**
Chemical Sciences	14904	3929	1259	**20092**
Earth& Related environ. Sciences	10832	4266	2349	**17447**
Biological Sciences	50747	19012	6569	**76328**
Civil Engineering	5523	1449	32	**7004**
Electrical Engineering, electronics	16608	4060	915	**21583**
Other engineering sciences	32967	15903	2077	**50947**
Basic Medicine	29681	11474	5983	**47138**
Clinical Medicine	14132	4561	1168	**19861**
Health Sciences	13782	3198	243	**17223**
Agriculture	4306	819	96	**5221**
Veterinary medicine	4714	1129	99	**5942**
Psychology	9079	1129	72	**10280**
Economics	5408	283	35	**5726**
Educational Services	12378	3280	87	**15745**
Other social sciences	38961	8202	1844	**49007**
History	7194	735	18	**7947**
Languages and Lit.	20044	1279	111	**21434**
Other humanities	7155	421	18	**7594**
Other	6841	2760	1708	**11309**
Total	355871	106003	29822	**491696**

Research Funding for Physics by Grant Awarder

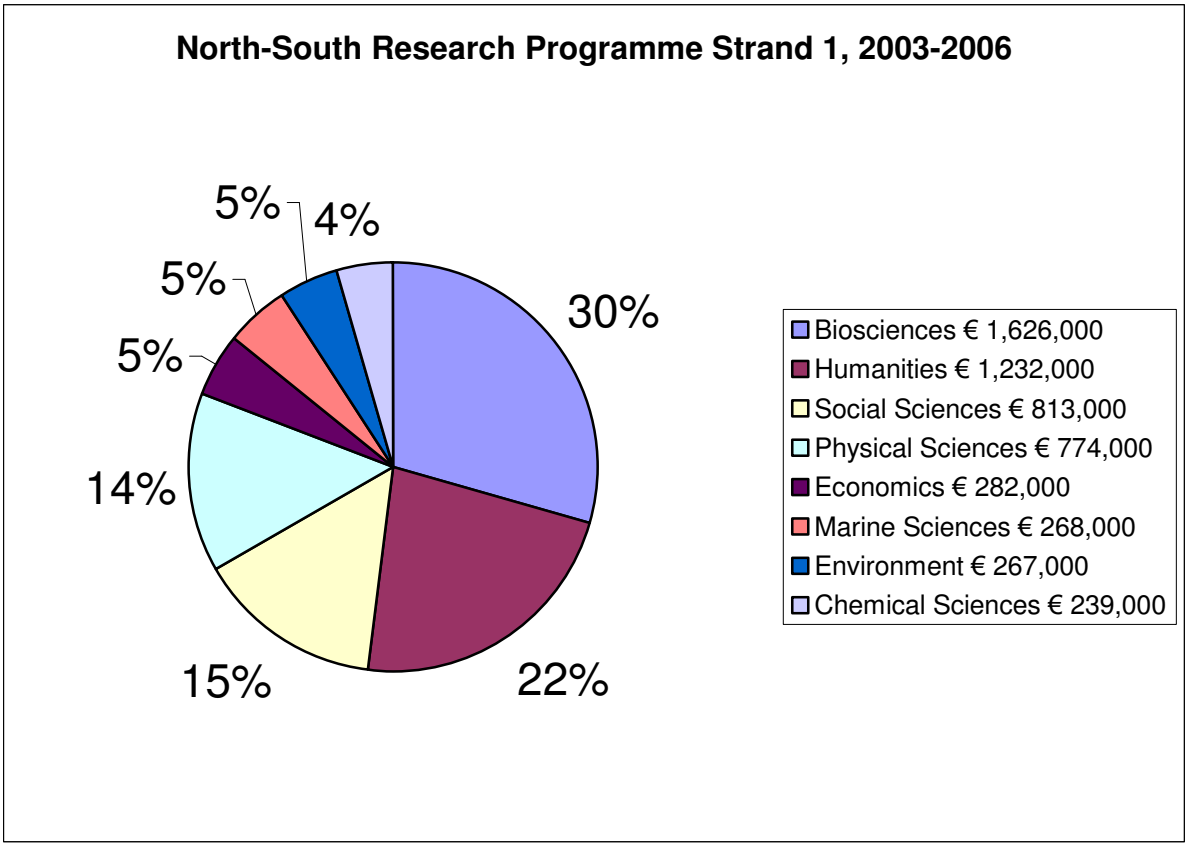
Embark Initiative Postdoctoral Fellowship Scheme 2005
Reference, Irish Research Council for Science, Engineering and Technology
Total Funding €48. Million
50 2-year Fellowships, July 2005

Subject	**No.**
Mol/Bio	11
Macro/Micro Biology	9
Chemistry	7
Physics	6
Computer Science	5
Earth/Environmental Science	5
Engineering	5
Maths	2



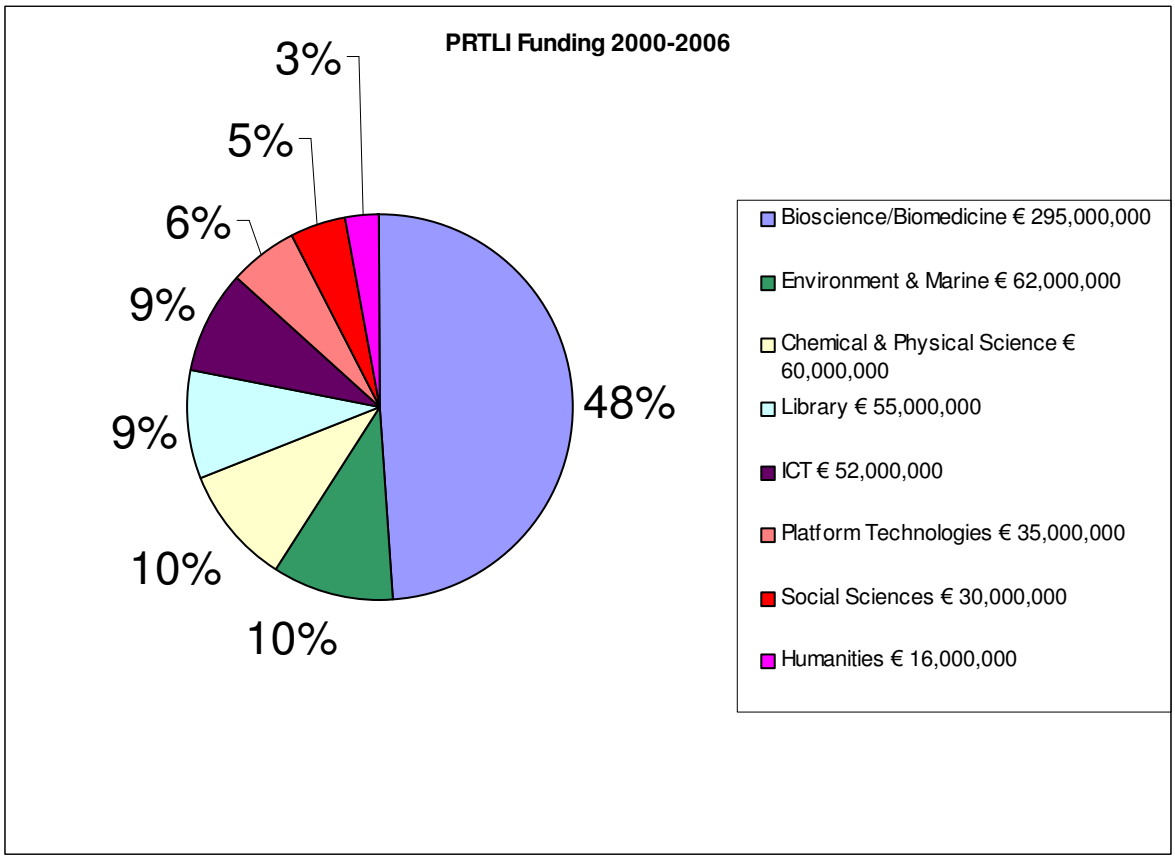
North South Research Programme Stand 1
Funding 2003-2006
Reference Higher Education Authority

Biosciences	€ 1,626,000
Humanities	€ 1,232,000
Social Sciences	€ 813,000
Physical Sciences	€ 774,000
Economics	€ 282,000
Marine Sciences	€ 268,000
Environment	€ 267,000
Chemical Sciences	€ 239,000
Total Awarded	€ 5,501,000



PRTLI Funding Period, 2000-2006

Bioscience/Biomedicine	€ 295,000,000
Environment & Marine	€ 62,000,000
Chemical & Physical Science	€ 60,000,000
Library	€ 55,000,000
ICT	€ 52,000,000
Platform Technologies	€ 35,000,000
Social Sciences	€ 30,000,000
Humanities	€ 16,000,000
	€ 605,000,000



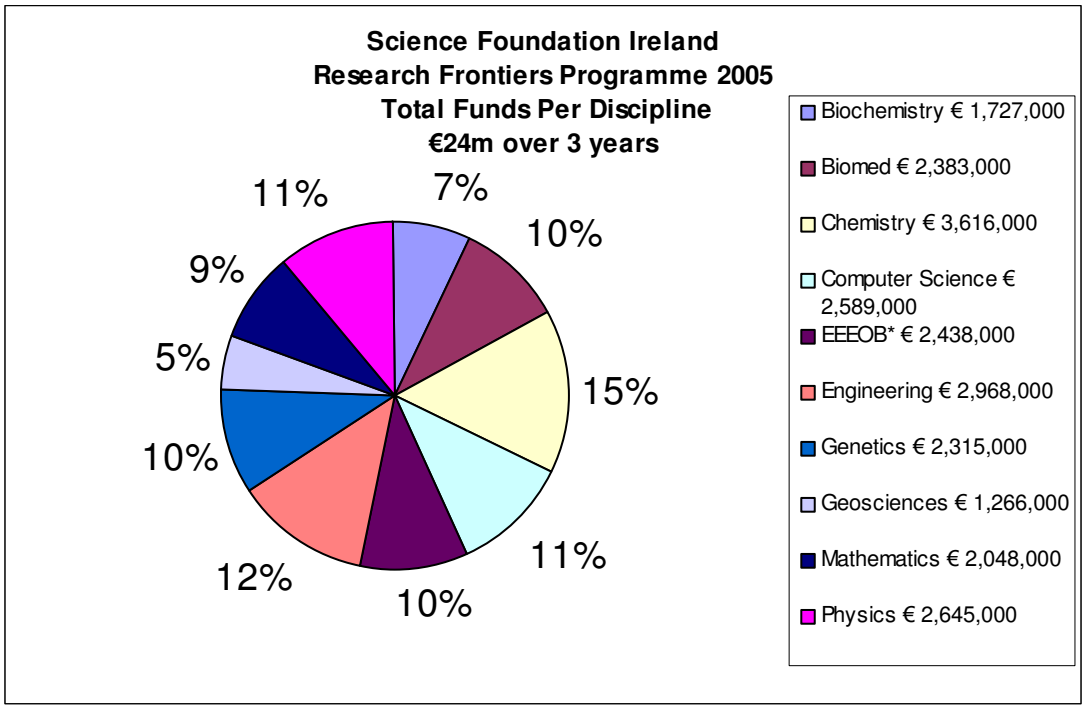
Reference: The Higher Education Authority, The Programme for Research in Third Level Institutions, Transforming the Irish Research Landscape, Dec 2003

Science Foundation Ireland
Research Frontiers Programme 2005
Total Funding (Direct and Indirect)

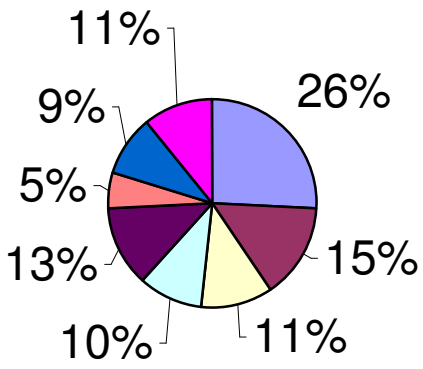
€24 million over three years

	Total Funding	Percentage
Biochemistry	€ 1,727,000	7.20
Biomed	€ 2,383,000	9.93
Chemistry	€ 3,616,000	15.07
Computer Science	€ 2,589,000	10.79
EEEOB*	€ 2,438,000	10.16
Engineering	€ 2,968,000	12.37
Genetics	€ 2,315,000	9.65
Geosciences	€ 1,266,000	5.28
Mathematics	€ 2,048,000	8.54
Physics	€ 2,645,000	11.02
Grand Total	€ 23,995,000	100

*Ecology, Evolutionary Biology, Environmental Biology & Organismal Biology

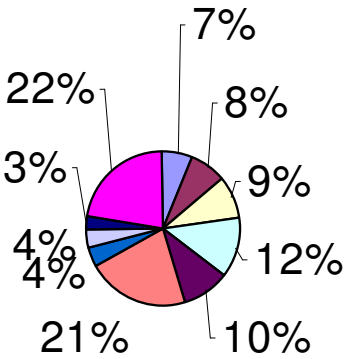


Science Foundation Ireland
Research Frontiers Programme 2005
Awards per Discipline

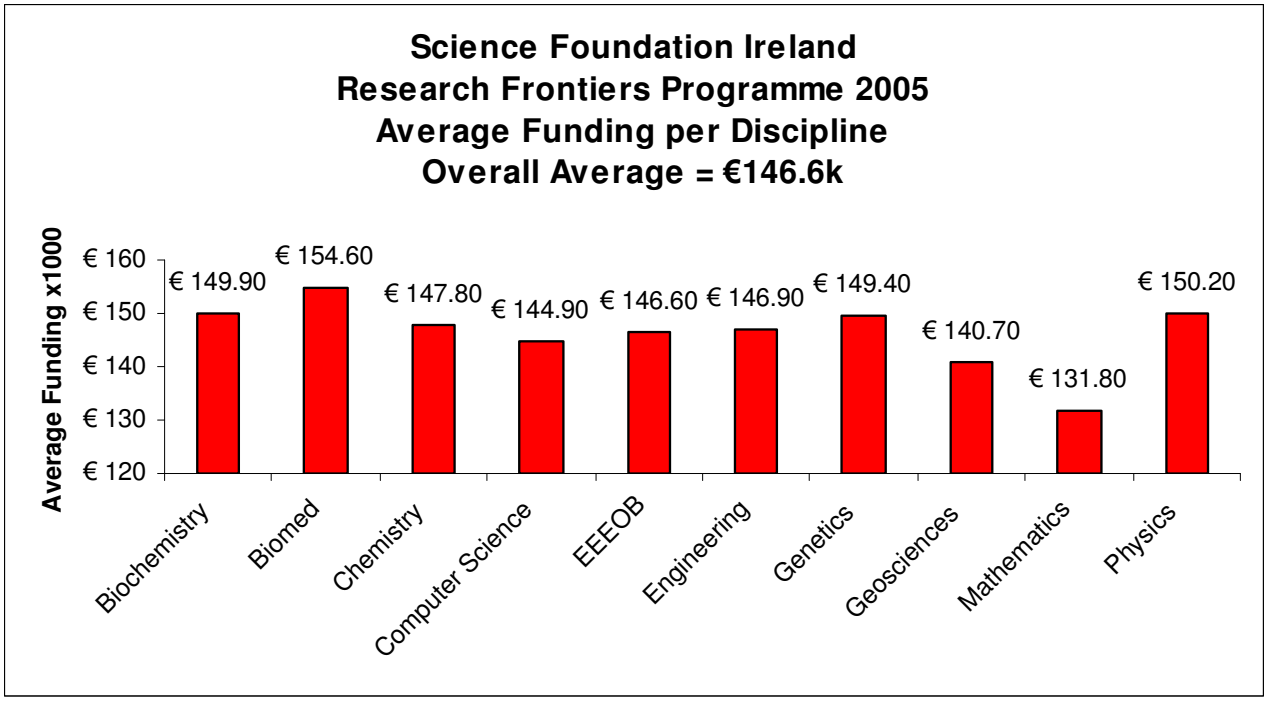


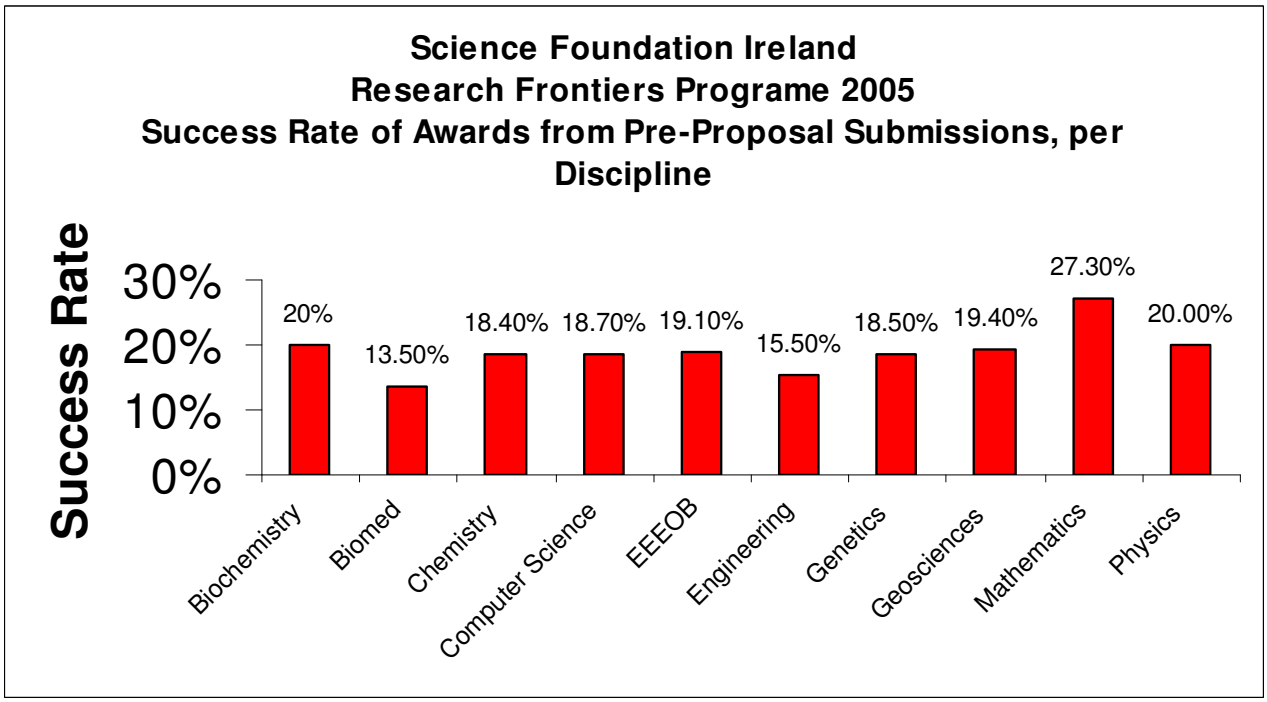
- Biosciences 33
- Chemistry 19
- Computer Science 14
- EEEOB* 13
- Engineering 16
- Geosciences 7
- Mathematics 12
- Physics 14

Science Foundation Ireland
Research Frontiers Programme 2005
Equipment Spend per Discipline

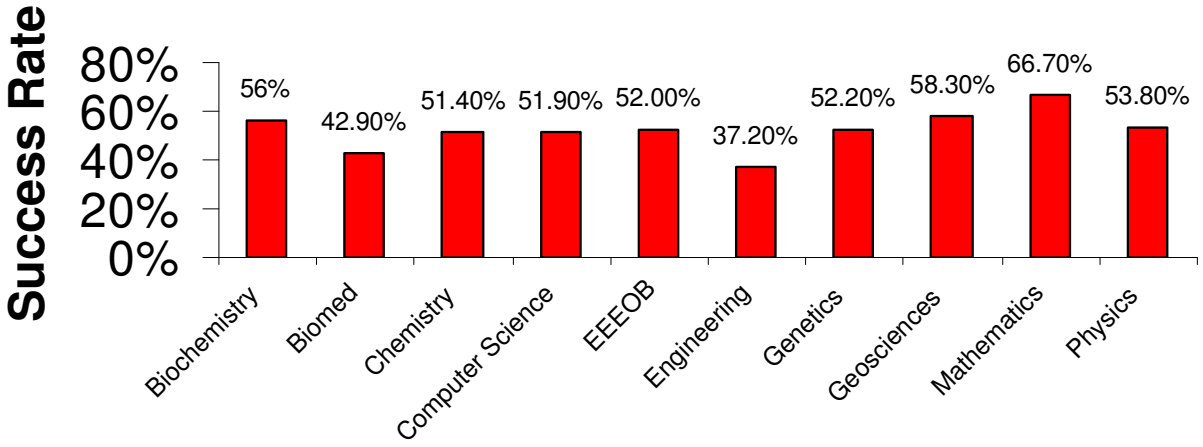


- Biochemistry € 86,098
- Biomed € 99,450
- Chemistry € 117,930
- Computer Science € 163,516
- EEEOB* € 126,420
- Engineering € 278,900
- Genetics € 53,627
- Geosciences € 46,655
- Mathematics € 40,700
- Physics € 295,244


Science Foundation Ireland
Research Frontiers Programme 2005
Average Funding per Discipline
Overall Average = €146.6k
Average Funding x1000
€ 160
€ 150
€ 140
€ 130
€ 120
€ 149.90
€ 154.60
€ 147.80
€ 144.90
€ 146.60
€ 146.90
€ 149.40
€ 140.70
€ 131.80
€ 150.20
Biochemistry
Biomed
Chemistry
Computer Science
EEEOB
Engineering
Genetics
Geosciences
Mathematics
Physics


Science Foundation Ireland
Research Frontiers Programe 2005
Success Rate of Awards from Pre-Proposal Submissions, per Discipline
Success Rate
30%
20%
10%
0%
20%
13.50%
18.40%
18.70%
19.10%
15.50%
18.50%
19.40%
27.30%
20.00%
Biochemistry
Biomed
Chemistry
Computer Science
EEEOB
Engineering
Genetics
Geosciences
Mathematics
Physics

Science Foundation Ireland
Research Frontiers Programme 2005
Success rate of Awards from Invited Full-Proposals, per Discipline



Science Foundation Ireland
Research Frontiers Programme 2005
Pre-Proposal submitted, Full-Proposals Invited and Awarded