



MAPPING PHYSICS STUDENTS IN EUROPE

Report prepared by Guillaume Troendle

with guidance by

David Lee, EPS Secretary General
and Martin C.E. Huber, EPS President

This report can also be downloaded from www.eps.org

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more than ideas

European Physical Society
34 rue Marc Seguin, BP 2136
F-68060 Mulhouse Cedex, France

tel: +33 389 32 94 40
fax: +33 389 32 94 49
web: www.eps.org

A general impression in most European countries is that the number of physics students, at all levels, is decreasing. Yet, no Europe-wide statistical study has been conducted to determine whether this is the case.

In order to implement the ERA, an additional half a million scientists in all fields will be necessary. To gauge the efforts needed to reach the objectives of the ERA (by 2010), it is necessary to have an accurate assessment of the situation regarding students in degree courses in science.

The EPS, as Europe's most comprehensive physics organization proposes to analyze the situation in physics in an overall perspective by mapping physics students in Europe.

The purposes of the MAPS project are:

- To provide information on the number of students entering physics degree courses over a five year period
- To provide information on the number of students obtaining a physics degree over the same period
- To compare the number of students studying and obtaining a degree in physics to the overall population of university students
- to compare the number of students studying and obtaining a degree in physics with one other natural science (life science) and one social science (economics)

Without being a political or social analysis, the MAPS Project includes facts, data and additional information needed to reach a better comprehension of the educational environment. It will also track graduates into the employment marketplace to determine if and where graduates finds jobs.

The MAPS project is a Europe-wide analysis, the countries the report includes all have their own education systems, and in most cases, several ways to obtain a same level degree. One of the most important constraints in such a project is to standardize the data gathered. Otherwise, the studies and the comparisons are going to be erroneous in their own sources. It is also important to determine the equivalencies of the systems and the degrees that can be obtain in one country, and the correspondence between each country's degrees. Still with a view to standardization, even the definition of "physics studies" has to be defined, to limit the analysis to equivalent programs. The project will use the UNESCO ISCED classification of 1997 to determine the levels.

In order to define levels of education uniformly across all countries, this publication uses terms that were developed by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and have been agreed upon by all participating countries. These levels, called the **International Standard Classification of Education (ISCED)** levels, are used to compile internationally comparable statistics on education.

The classification distinguishes between seven levels of education ranging from pre-primary to tertiary. Higher education, also referred to as tertiary education, includes three ISCED levels and is the equivalent of postsecondary education in the United States.

<u>ISCED level</u>	<u>Definition</u>
0	Pre-primary
1	Primary
2	Lower secondary
3	Upper secondary
5	Higher education
6	Higher education (university)
7	Higher education (university)

Level 5: Community or junior colleges or vocational technical institutes (non-university) leading to an associate's degree.

Level 6: University or other 4-year education institution leading to a bachelor's degree.

Level 7: A University or professional institute leading to a master's or doctor's degree.

Physics studies:

Physics can be defined as the branch of science concerned with the properties of matter and energy and the relationships between them. It is based on mathematics and traditionally includes mechanics, optics, electricity and magnetism, acoustics, and heat. Modern physics, based on quantum theory, includes atomic, nuclear, particle, and solid-state studies. It can also embrace applied fields such as geophysics and meteorology.

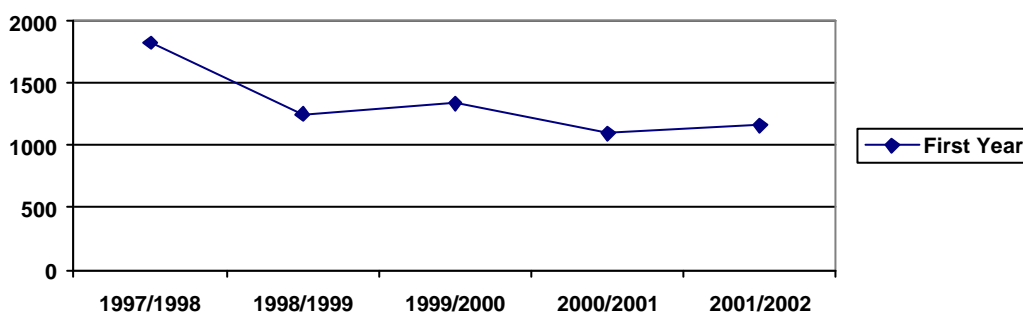
ALBANIA

The higher education in Albania has three stages. The first one (graduate) takes on average four to five years (4 years with most disciplines, 4 to 5 in engineering, 6 in medicine).The second stage (postgraduate studies) lasting 2-3 years after completion of the first stage of higher education, leading to the award of the “Kandidat i Shkencave Degree». The last stage includes individual study and research together (without being detached from daily work) leading to the award of the “Doktor i Shkencave Degree” (Doctorate). *The first years of physics studies are common with the other natural sciences* *.

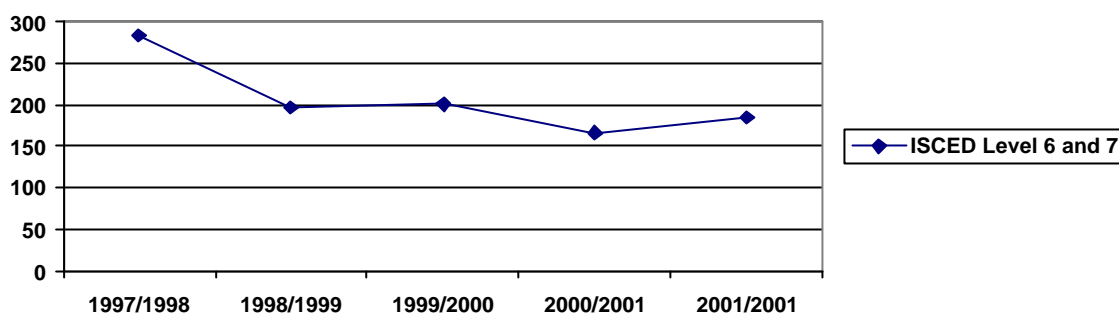
Students entering natural sciences courses and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	1832*	284
98/99	1251*	197
99/00	1338*	201
00/01	1098*	166
01/02	1163*	185

Students entering a natural sciences degree program over the 1997/2002 period

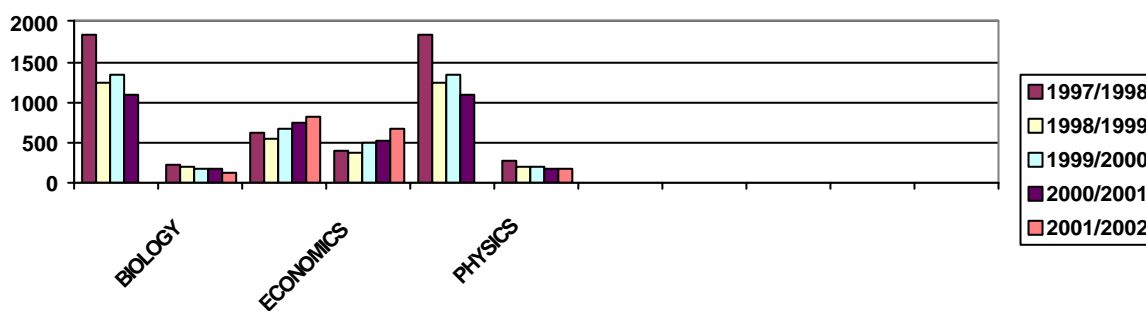


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	1832*	215	627	392	1832*	284	16044	6708
98/99	1251*	206	545	371	1251*	197	16378	7861
99/00	1338*	183	672	487	1338*	201	14355	8997
00/01	1098*	181	733	524	1098*	166	17670	8735
01/02	1163*	130	818	662	1163*	185	17442	8618



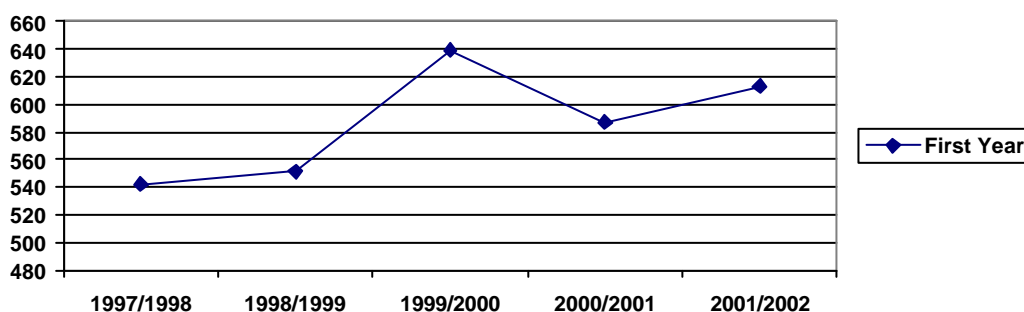
AUSTRIA

Bachelor (Bakkalaureus) programmes have only been introduced in a few fields of study. The universities or Fachhochschulen respectively are free to split diploma programmes into Bachelor and Master programmes. There are two kinds of academic programmes: degree programmes (ordentliche Studien), which lead to the first academic degree, and university course programmes (Universitätslehrgänge) which lead to a Certificate. Bachelor studies last for 6-8 semesters, require at least two Bachelor essays and end with a Bachelor examination (Bakkaureatsprüfung). They lead to the academic degree of Bakkalaureus/Bakkalaurera. Access to university Master programmes (i.e. programmes which are preceded by a Bachelor programme) is based on a completed Bachelor programme. There are two kinds of academic programmes: degree programmes (ordentliche Studien) which lead to the second academic degree and university course programmes (Universitätslehrgänge) which lead to an Advanced Master's degree (e.g. MAS, MBA, LL.M.). Master programmes last for 1-2 years and require a master thesis and end with a Master examination (Magisterprüfung). They lead to the academic degree of Magister/Magistra, in Engineering to the Diplom-Ingenieur/Diplom-Ingenieurin. Doctoral studies generally require a minimum of four semesters. Access is based on a completed Diploma or Master programme at a university or a Fachhochschule. They are then awarded the title of Doktor/Doktorin.

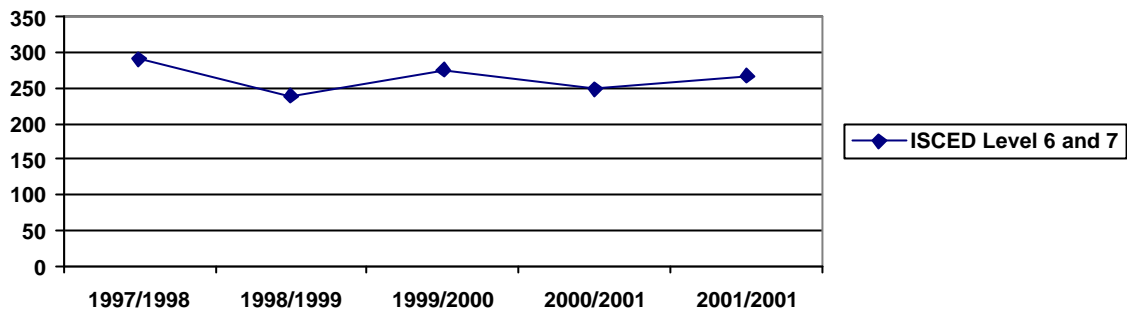
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	542	291
98/99	551	239
99/00	639	276
00/01	587	248
01/02	613	267

Students entering a physics degree program over the 1997/2002 period

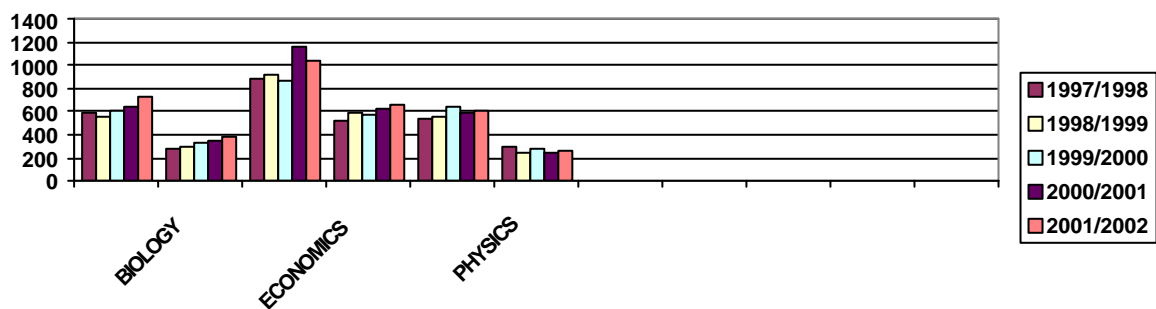


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	595	279	886	527	542	291	27699	17626
98/99	564	292	919	583	551	239	25483	18772
99/00	616	326	874	572	639	276	26217	16334
00/01	650	349	1172	622	587	248	25111	16817
01/02	737	384	1032	658	613	267	24761	15648



BELGIUM

Higher education is provided in both universities and non-university institutions, mainly the Hautes Ecoles, which include long cycle and short cycle studies. Private higher education is of considerable importance: it takes place either in religious institutions or in civic institutions. The community is responsible for official education. Private institutions of higher education receive financial aid from the state, subject to certain conditions.

The first stage of higher education covers a period of two to three years devoted to broad, multidisciplinary studies. It leads to the first university degree, the Candidature.

The second stage, consisting of a period of at least two years of in-depth study following the award of the Candidature, leads to the Licence; however, in certain subjects three and sometimes four years of study are necessary. For teachers in upper-secondary education, the Agrégation de l'Enseignement secondaire supérieur is taken at this stage.

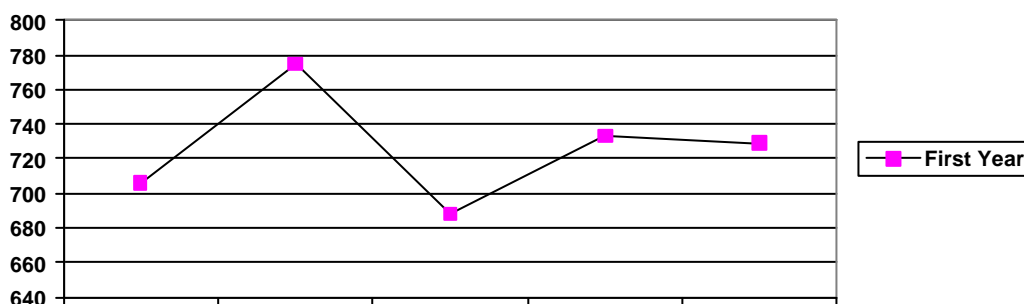
The third stage, corresponds to a second or third phase of specialization, or to an initiation into scientific research which leads to a Doctorat after a minimum of a further year of theoretically-oriented study. In practice, the duration of studies leading to the Doctorat is five or six years beyond the Licence, sometimes more.

The fourth phase leads to the degree of Agrégation de l'Enseignement supérieur after a variable number of years (but not less than two years) in specialized in-depth research after obtaining a Doctorat.

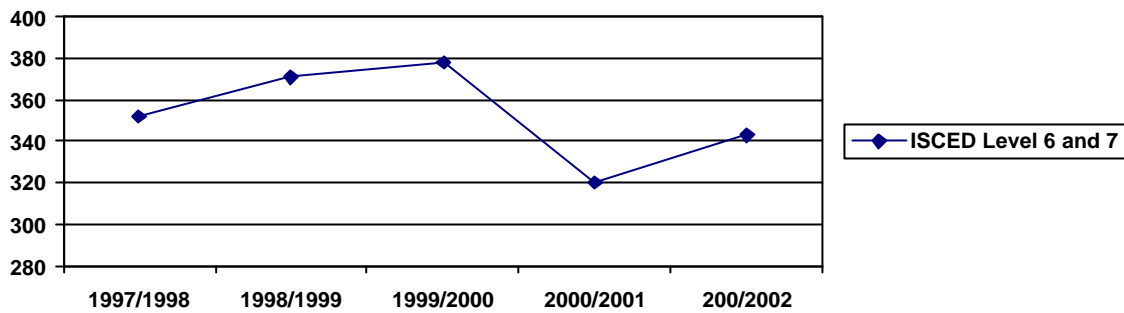
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	706	352
98/99	775	371
99/00	688	378
00/01	733	320
01/02	729	343

Students entering a Physics degree program over the 1997/2002 period

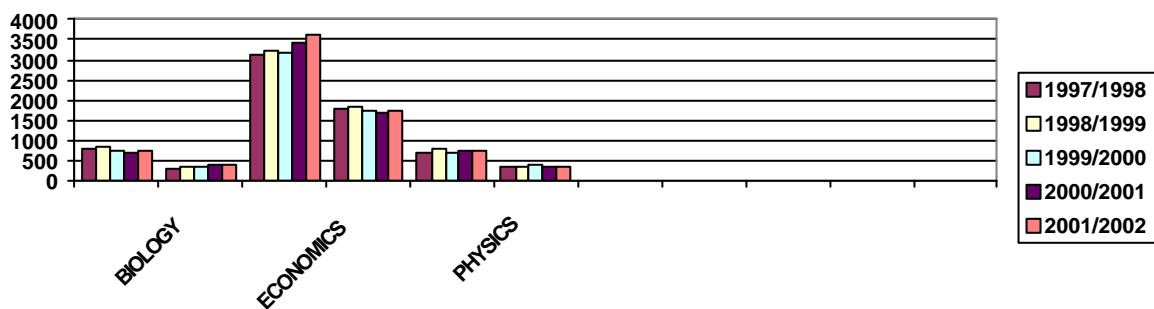


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	788	317	3104	1802	706	352	36537	22054
98/99	827	374	3237	1831	775	371	34316	23338
99/00	764	329	3193	1728	688	378	36098	24278
00/01	719	394	3413	1699	733	320	32124	21309
01/02	732	406	3637	1751	729	343	31948	23544



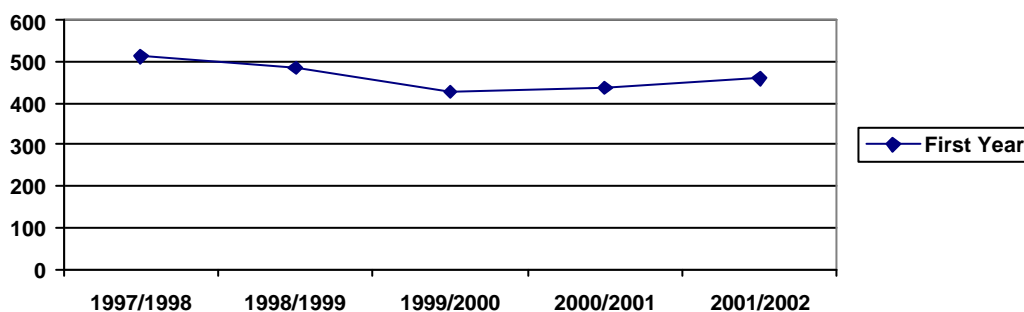
BULGARIA

Higher education in Bulgaria has 3 stages, the first stage of study at higher education institutions (HEI) lasts for at least four years and leads to the Bachelor's Degree (Bakalavr) in many fields. This is a degree created by the Higher Education Act of 1995. However, there are some fields where the Bachelor does not exist and where studies lead directly to the second stage of studies (Master's Degree level). According to the last amendments to the Higher Education Act, the Bachelor's degree also gives access to doctoral studies with a duration of 4 years. The second stage of study (Master) lasts for five years after completion of secondary education or one year after obtaining the Bachelor's Degree. Students must (usually) complete a thesis and pass a state examination. The former Diplom za Visse Obrazovanie, awarded before the 1995 law, is officially regarded as equivalent to the Master's. The third degree in the higher education system leads to the title of Doktor. It is obtained on the basis of individual research and after the defence of a thesis. It replaces the former Kandidat na Naukite (Candidate of the Sciences). The Higher Education Act of 1995 grants all Kandidat na Naukite holders the right to use the title Doktor.

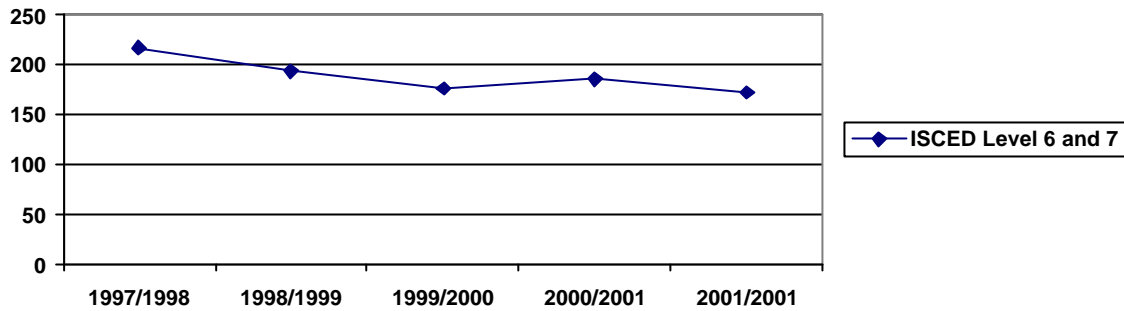
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	514	217
98/99	486	194
99/00	427	176
00/01	438	186
01/02	459	172

Students entering a Physics degree program over the 1997/2002 period

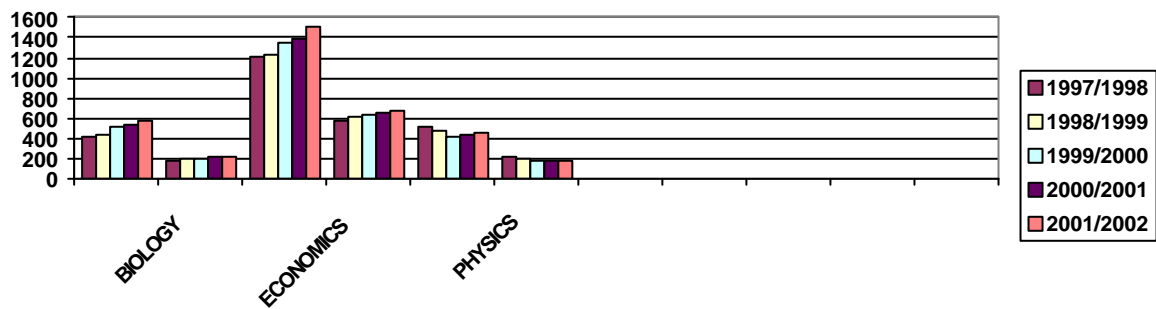


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	417	186	1203	583	514	217	28516	12459
98/99	428	198	1222	613	486	194	28175	13648
99/00	516	207	1345	627	427	176	31540	13828
00/01	527	214	1386	649	438	186	30734	13356
01/02	574	211	1502	675	459	172	31553	13786



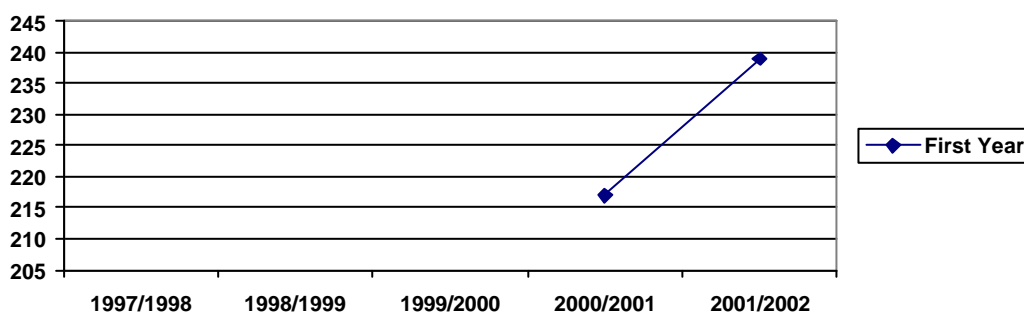
CROATIA

Institutions of higher education include universities, faculties, academies of arts, polytechnics and schools of professional higher education. Higher education is divided into a university and a non-university sector. Universities can comprise faculties, academies of arts or departments. In addition to public higher education institutions which are founded by law or by a regulation of the Government of Croatia, there are private institutions which are founded by a decision of a founder. Private institutions of higher education must be approved by the National Council for Higher Education. There are four universities in Croatia located in Osijek, Rijeka, Split and Zagreb. The first stage is the Diploma, it is awarded after a total of four to six years' study. It qualifies the student for specialized, artistic or scientific work. Students graduating with a high grade may go on to study for a Magistar (Master's degree) in either Arts or Science subjects. In both cases they have to defend a thesis (Strucni rad/Umjetnicki rad). The final postgraduate qualification (third stage) is that of Doktor (Doctor of Science). Graduate scientific study ends with the defence of a doctoral thesis (Doktorski rad).

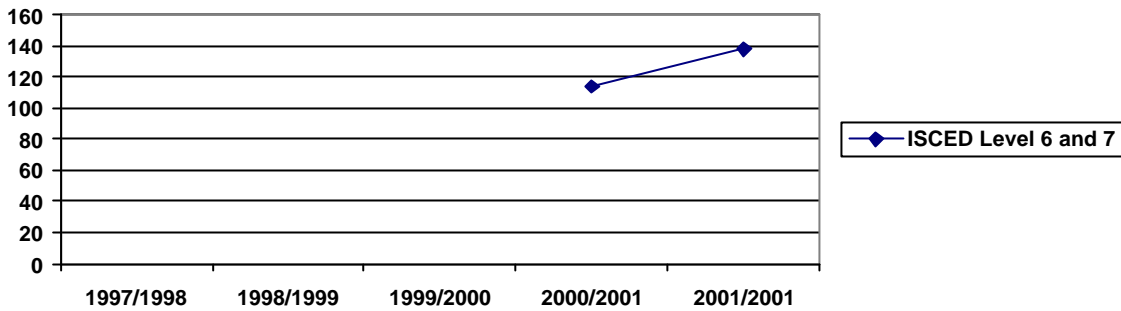
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	X	X
98/99	X	X
99/00	X	X
00/01	217	114
01/02	239	138

Students entering a Physics degree program over the 1997/2002 period

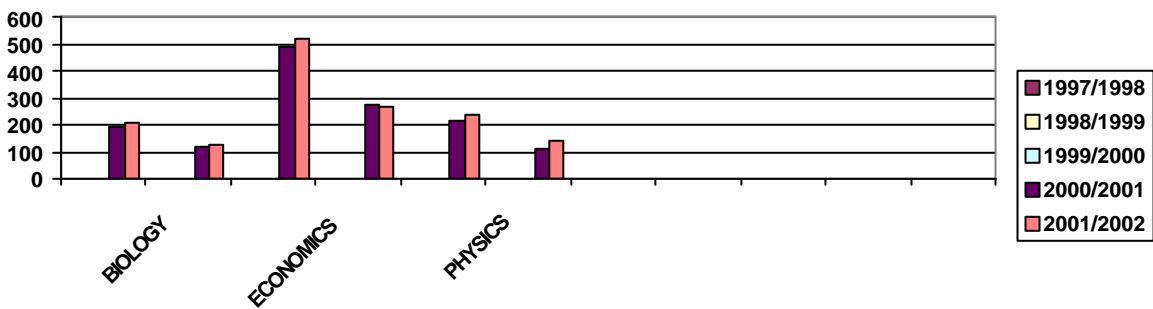


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	X	X	X	X	X	X	X	X
98/99	X	X	X	X	X	X	X	X
99/00	X	X	X	X	X	X	X	X
00/01	195	119	494	272	217	114	14419	6731
01/02	208	123	518	266	238	139	17193	7248



CZECH REPUBLIC

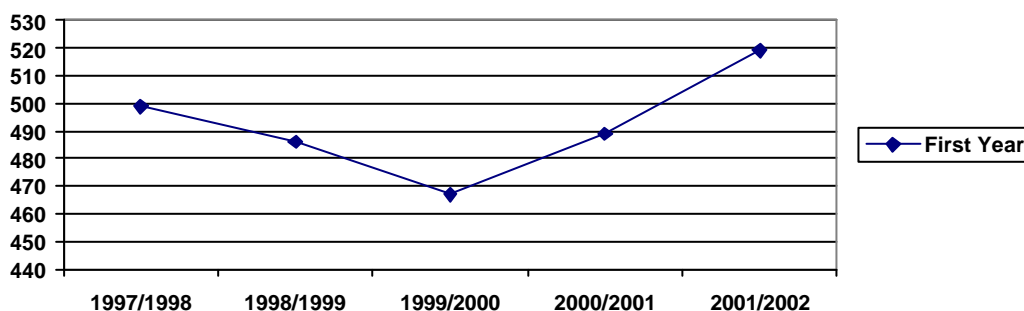
Higher education is provided by university type and non-university type institutions. The non-university higher education institutions mainly offer Bachelor study programmes. Higher education institutions of university type offer Bachelor, Master and Doctoral study programmes. The majority of higher education institutions are public institutions. The first stage is conceived either as an independent course whose graduates are fully qualified for particular professions, or as the first stage of longer studies whose graduates can continue towards the Magistr degree. This cycle leads to the academic degree of Bakalár (Bc.).

The Master study programmes in Natural Sciences lead to the title of Magistr (Mgr) (second stage). The third and highest level of higher education consists in studies for the Doctorate which take place under the guidance of a tutor. The programme is aimed at scientific research and independent study. Holders of the Master's Degree may apply. Studies last for three years (four to five years part-time) and lead to the academic degree of Doktor (PhD).

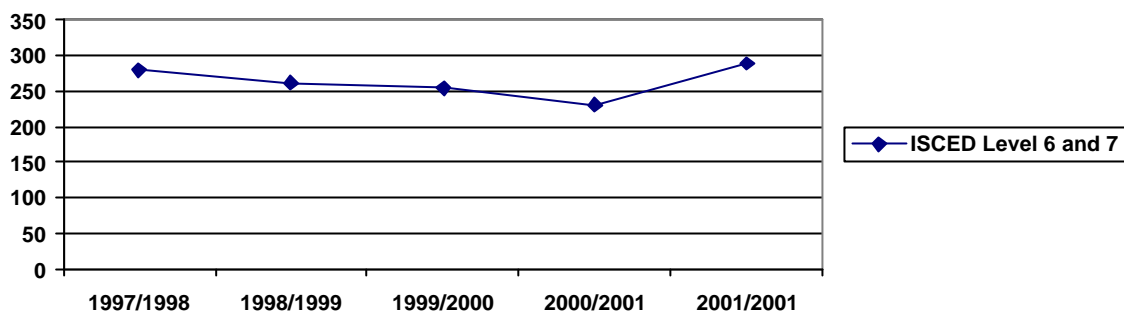
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	499	279
98/99	486	262
99/00	467	254
00/01	489	231
01/02	519	289

Students entering a Physics degree program over the 1997/2002 period

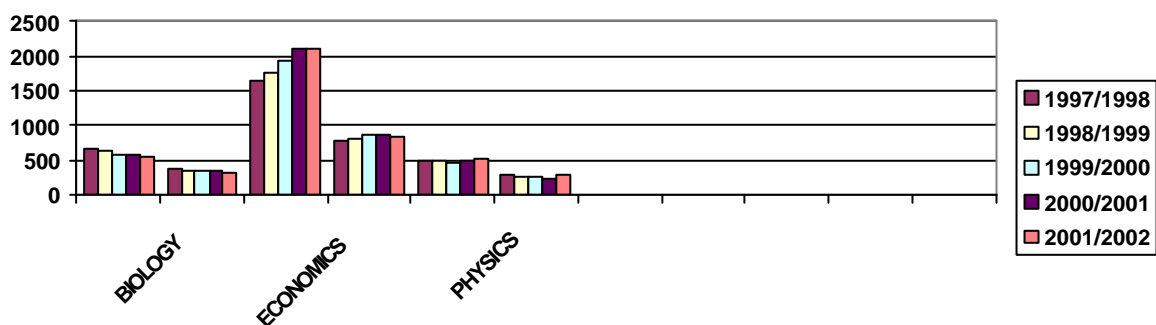


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	651	385	1647	768	499	279	52326	21614
98/99	629	362	1749	812	486	262	51858	22769
99/00	594	343	1937	857	467	254	52576	22064
00/01	572	348	2114	861	489	231	53127	21432
01/02	548	319	2107	843	519	289	54423	20887



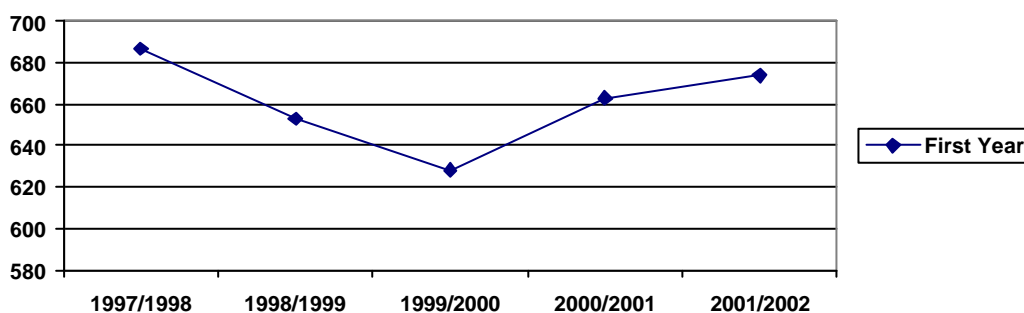
DANEMARK

Higher education comprises a university sector and a college sector, i.e. the professionally-oriented higher education sector. The university sector includes 11 universities, 5 of which are multi-faculty universities. The university sector offers courses at three levels: Bachelor's Degree (normally 3 years of study), the Candidatus Degree (i.e. Master's Degree, normally 2 years following upon the Bachelor's Degree) and the Ph.D. Degree (normally 3 years' study after the Candidatus Degree). The universities also award the traditional higher Doctoral Degree (dr. phil., dr. scient etc) after a minimum of 5-8 years' individual and original research..

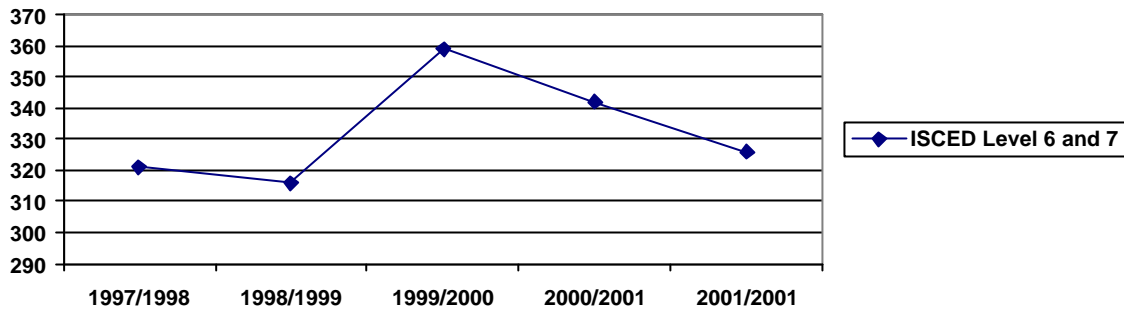
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	687	321
98/99	653	316
99/00	628	359
00/01	663	342
01/02	674	326

Students entering a Physics degree program over the 1997/2002 period

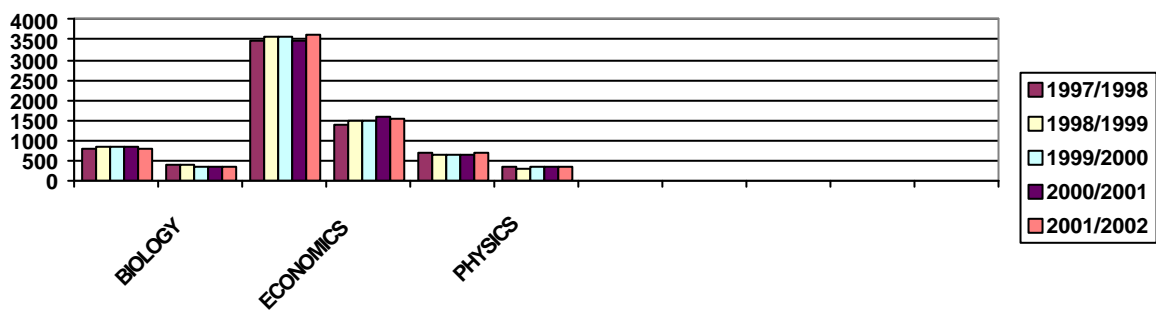


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	813	387	3446	1374	687	321	42647	20708
98/99	821	376	3576	1464	653	316	44781	21382
99/00	847	367	3548	1496	628	359	44128	23627
00/01	838	356	3499	1573	663	342	46538	22745
01/02	811	331	3602	1558	674	326	46819	23393



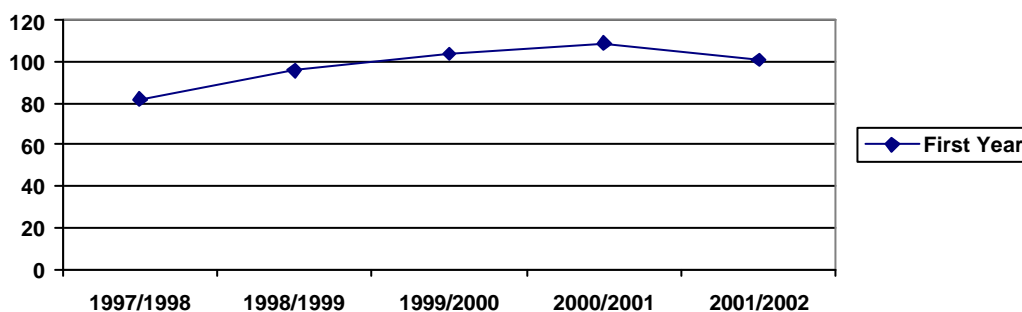
ESTONIA

The higher education system is binary and consists of universities (ülikool) and applied higher education institutions (rakendus kõrgkool). Since 1999 some post-secondary vocational schools have a right to offer vocational higher education. There are six public universities, twelve private universities, seven state institutions of applied higher education, six private applied higher education institutions, nine state vocational education institutions and eight private vocational education institutions offering vocational higher education. The usual duration of studies is three to four years. Bakalaureus level study is the first stage of academic studies. Its main purpose is to increase students' level of general education and develop theoretical knowledge and professional skills for the selected area of employment and further study. The length of bakalaureus level study is three to four years (since 1999). Magister level study is the second stage of academic study. Its main purpose is to deepen theoretical and specialist knowledge and develop proficiency in research, professional or other creative work for individual use of knowledge and skills. The length of study is two years (since 1999, 1-2 years, but together with bakalaureus study no less than five years). Graduates who have completed their studies receive a diploma certifying the Magistrikraad. Doktor study is the third stage of academic study, consisting of comprehensive research, professional or other creative work and interrelated studies. The nominal length of study is four years. Graduates who have completed their studies receive a diploma certifying the Doktorikraad

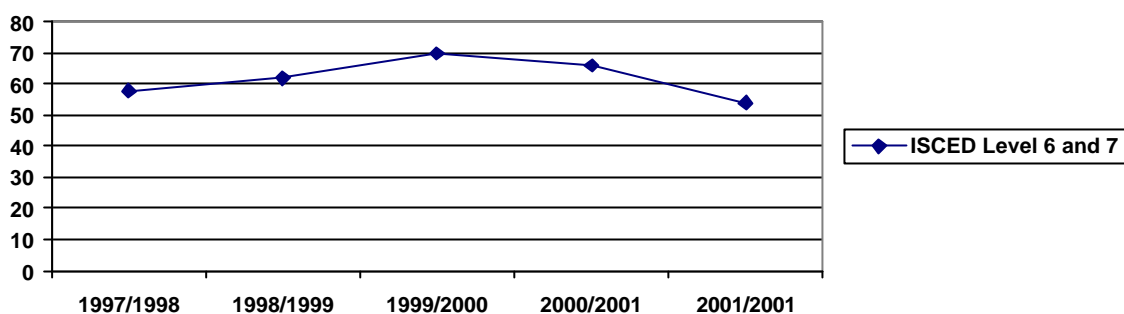
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	82	58
98/99	96	62
99/00	104	70
00/01	109	66
01/02	101	54

Students entering a Physics degree program over the 1997/2002 period

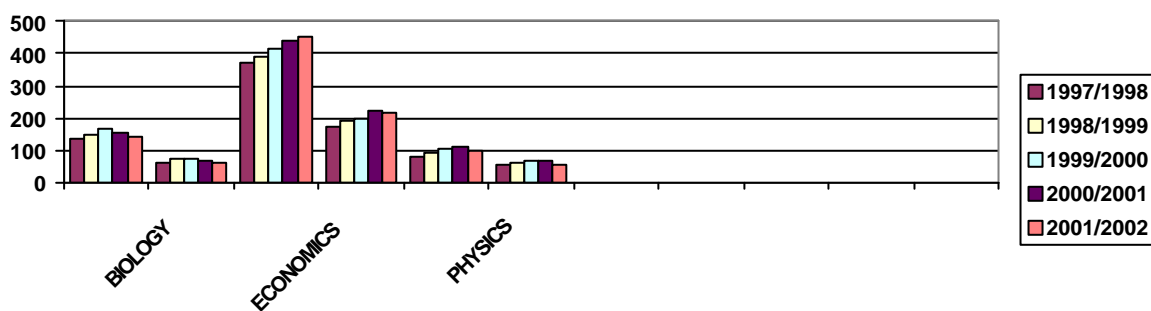


Students obtaining a physics degree over the 1997/2002 period



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	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	139	61	374	177	82	58	5106	3130
98/99	147	77	389	189	96	62	5256	2809
99/00	165	73	412	199	104	70	5231	2728
00/01	153	68	438	226	109	66	5318	2714
01/02	142	64	451	218	101	54	5497	2659



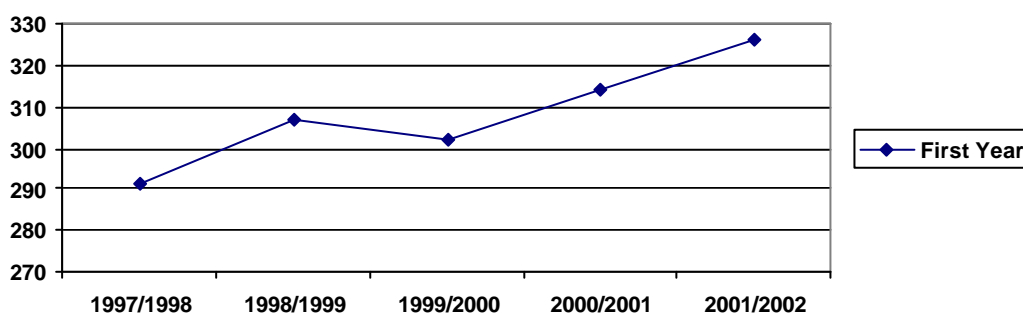
FINLAND

Finland has 20 universities. In a country with only five million people, this is quite a high number. Most of the students selected for the universities are admitted to courses leading to a higher university degree (Master). The higher university degree is designed to take 5-6 years to complete after the matriculation examination. Students may if they wish also work for a lower university degree (Bachelor) taking 3-4 years to obtain. After the lower degree they can continue for a higher degree or make the transition to the labour market. Students who have completed a higher degree may go on to take a doctorate-level degree. In most fields, students can also take an optional Licentiate's degree before going on to a doctorate.

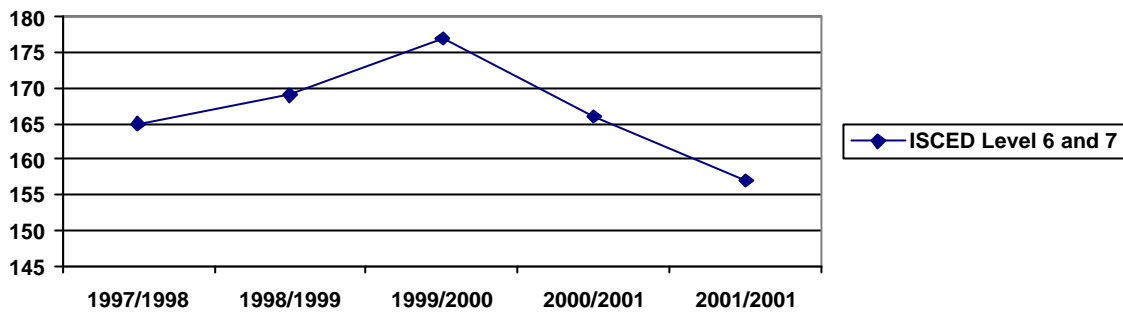
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	291	165
98/99	307	169
99/00	302	177
00/01	314	166
01/02	326	157

Students entering a Physics degree program over the 1997/2002 period

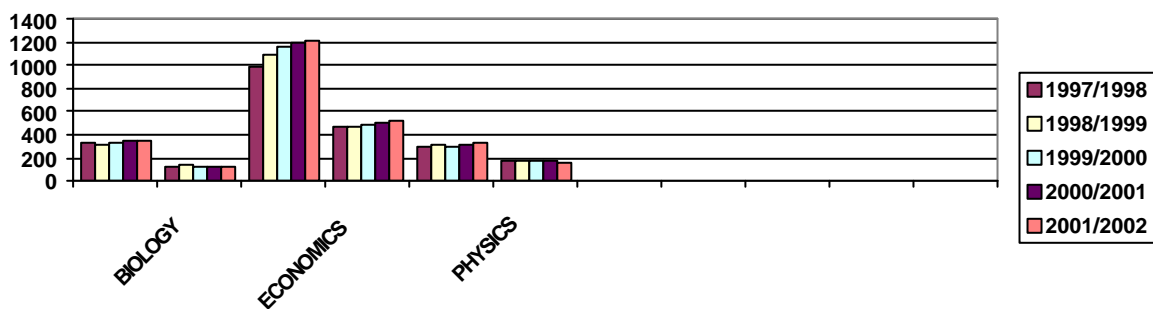


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	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	332	131	983	468	291	165	13319	7446
98/99	318	139	1096	476	307	169	13678	7678
99/00	324	126	1159	482	302	177	13851	8203
00/01	339	114	1201	505	314	166	14558	8218
01/02	341	128	1218	518	326	157	14251	8315



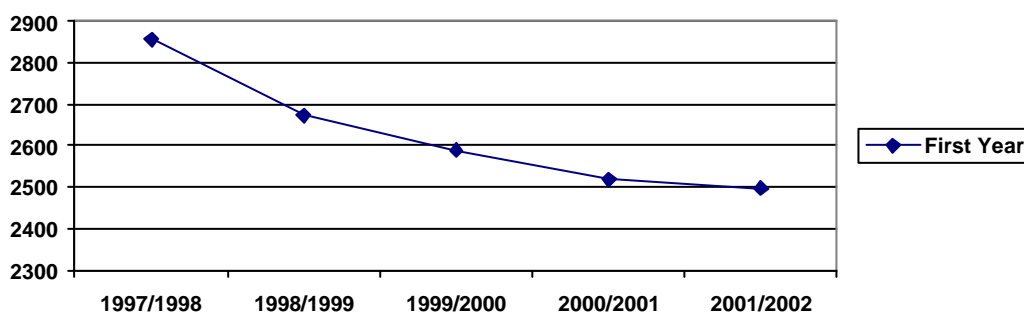
FRANCE

Higher education in France is characterized by a dual system : it is provided in universities (including Instituts nationaux polytechniques) open to a large number of students, whose programmes are generally geared towards research and its applications and in Grandes Ecoles and other professional higher education institutions with selective admission policies. The first cycle of long study courses corresponds to basic training in a specific field. It leads, two years after the Baccalauréat, to the Diplôme d'Etudes universitaires générales (DEUG) with mention of the major field of study. Two years in Classes Préparatoires aux Grandes Ecoles (CPGE) are required to enter a Grande Ecole. The second cycle normally leads after one year to the Licence and after another to the Maîtrise. In professional fields, the following Maîtrises are awarded two years after the DEUG. The third cycle is devoted to specialization and training for research. It offers two channels: a professional one, leading in one year to the Diplôme d'Etudes Supérieures Spécialisées (DESS), a terminal degree. A doctoral channel leads in one year to the Diplôme d'Etudes Approfondies (DEA) and then to preparation of a Doctorat. The latter is obtained three or four years after the DEA and after extensive research, either individual or as part of a group supervised by a Directeur de Thèses and the preparation and successful defence of a thesis. The Doctorat may be followed by a post-doctoral degree, the Habilitation à Diriger les Recherches, which constitutes the highest national award and is offered to academics who display the ability to carry out high level scientific research and to supervise thesis.

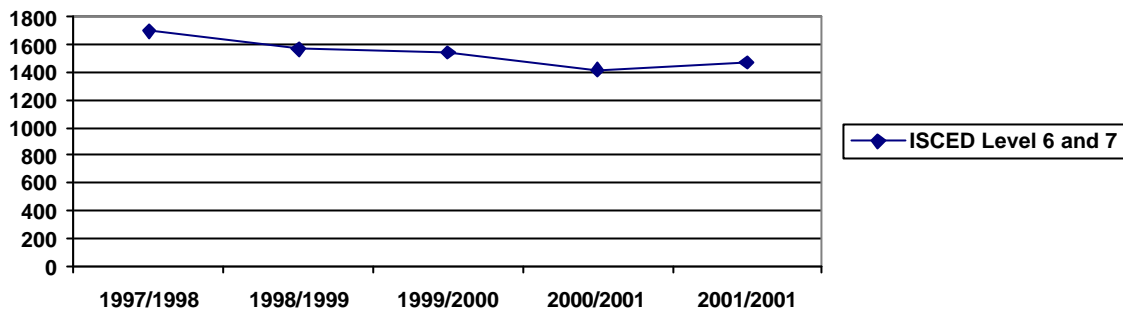
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	2856	1701
98/99	2672	1567
99/00	2589	1544
00/01	2518	1417
01/02	2497	1469

Students entering a Physics degree program over the 1997/2002 period

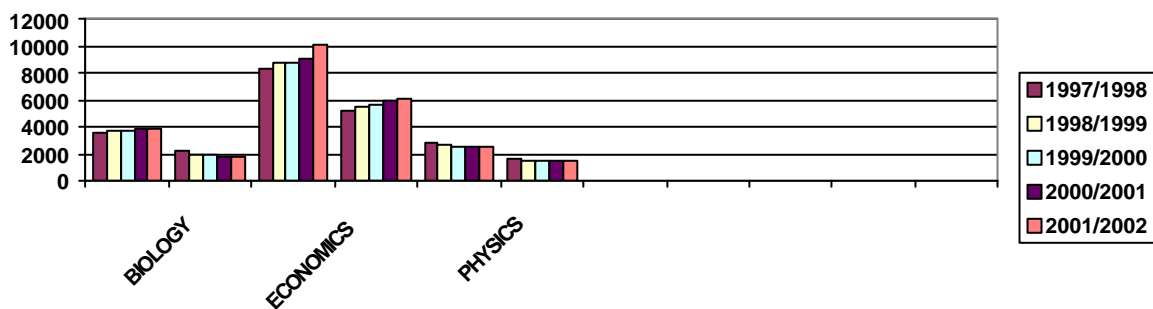


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	3637	2173	8401	5267	2856	1701	206544	129508
98/99	3719	1974	8712	5449	2672	1567	211328	124313
99/00	3762	1939	8785	5671	2589	1544	219743	117111
00/01	3821	1826	9015	5932	2518	1417	224633	114759
01/02	3848	1811	10174	6107	2497	1469	227479	112215



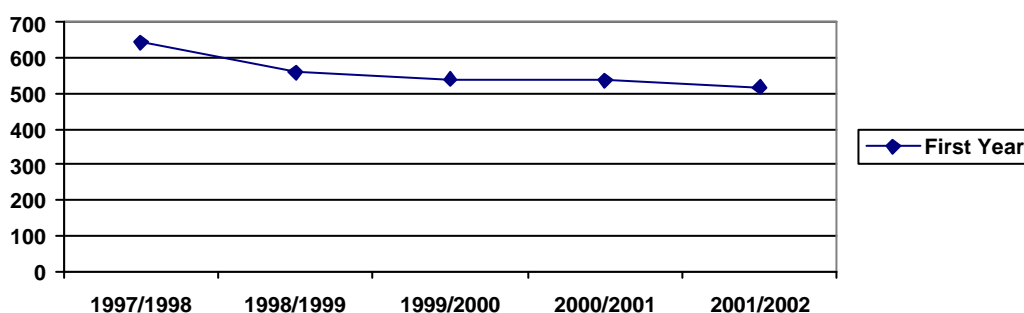
GREECE

Under the terms of the Constitution of 1975, higher education is dispensed by institutions which enjoy the status of legal persons under public law. Greece's 18 university institutions (AEI) and its 14 institutions of technological education (TEI) are self-governing and under the supervision of the Ministry of National Education and Religious Affairs which supports them financially and is responsible for educational policy concerning them. Undergraduate degree programmes at universities normally last for four years (eight semesters) and lead to the Ptychio in the relevant field. The first level of postgraduate studies, of a duration of a minimum of four semesters, leads to the Metaptychiako Díploma Exidíkefsis (Postgraduate Diploma of Specialization). This study programme may be carried out and completed in a university or research institute outside Greece. The degree, however, is awarded in Greece. The doctoral degree (Didaktoriko) is conferred after the public defence of a thesis. The research must be original and show advances in research and science. A doctoral thesis requires at least three years' study since the student was admitted to doctoral studies. Students can be admitted to a doctoral research programme when they hold a Greek Ptychio or Diploma or an equivalent qualification obtained abroad and recognized by Dikatsa.

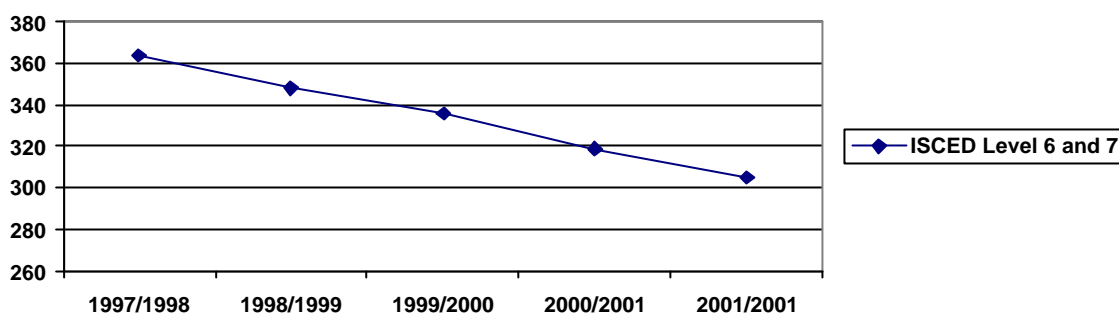
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	644	364
98/99	559	348
99/00	541	336
00/01	536	319
01/02	517	305

Students entering a Physics degree program over the 1997/2002 period

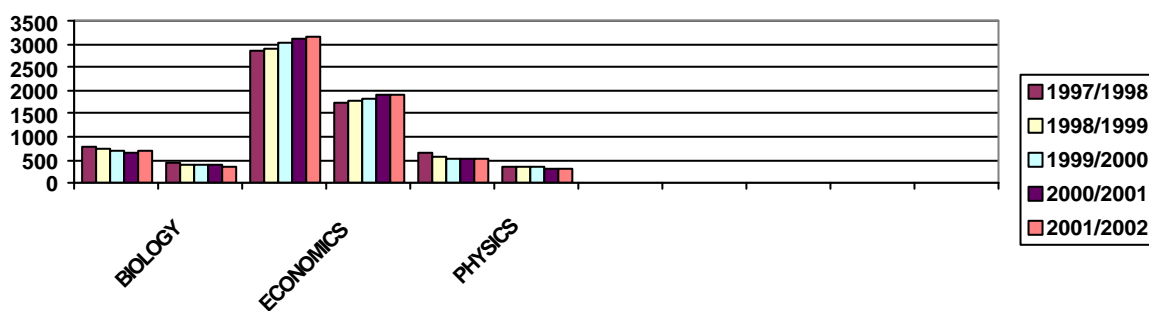


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	766	419	2859	1725	644	364	26613	16831
98/99	718	384	2913	1768	559	348	27867	17236
99/00	698	372	3047	1826	541	336	27192	17423
00/01	671	379	3118	1889	536	319	29619	17916
01/02	683	366	3184	1917	517	305	27949	18327



HUNGARY

Hungarian higher education has a dual system with colleges and universities. Some colleges are associated with universities and operate as college faculties of the universities. A university can also offer college level courses. The duration of training at college level is minimum 3 years, maximum 4 years; the duration of education at university level is minimum 4 years, maximum 5 years. According to the binary pattern, colleges and universities grant Főiskolai Oklevél (college level degree) and universities grant Egyetemi Oklevél (university level degree). Universities organize three-year PhD courses, specialized further education courses (with a normal duration of two years) and various continuous education courses.

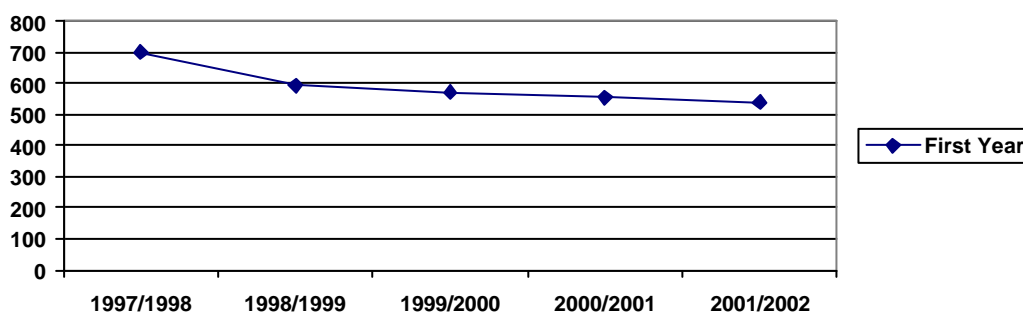
Higher education at university level generally consists of a course, usually four to six years in duration, which confers, after the defence of a thesis and successful completion of the final examination, the higher education qualification of Oklevél/Egyetemi Oklevél (University Degree). This qualification - which may also be called "Master's"- entitles holders to practise a profession or to continue higher education studies and obtain a Szakirányú Továbbképzési Oklevél (Post-university Specialization degree) in one to three years or to pursue doctoral studies. The Szakirányú Továbbképzési Oklevél (Further Specialization Degree) may be obtained after the Főiskolai Oklevél (College Degree) or Egyetemi Oklevél (University Degree) after following a programme of one to two years.

Doctoral studies are another type of postgraduate studies. This stage of higher education leads to the degrees of Doktor or Mester three years after the Oklevél/ Egyetemi Oklevél.

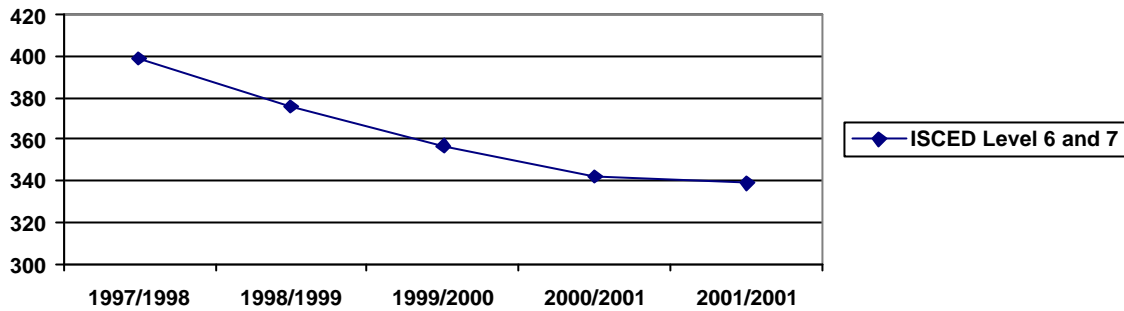
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	701	399
98/99	594	376
99/00	572	357
00/01	555	342
01/02	541	339

Students entering a Physics degree program over the 1997/2002 period

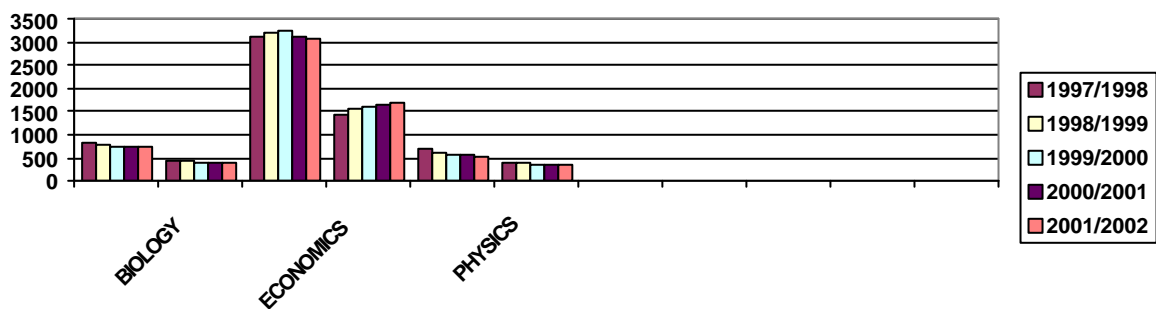


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	809	456	3107	1429	701	399	30130	17611
98/99	766	419	3219	1577	594	376	31673	17938
99/00	732	386	3245	1598	572	357	32219	18101
00/01	746	394	3134	1653	555	342	32616	18197
01/02	758	378	3096	1684	541	339	32871	18173



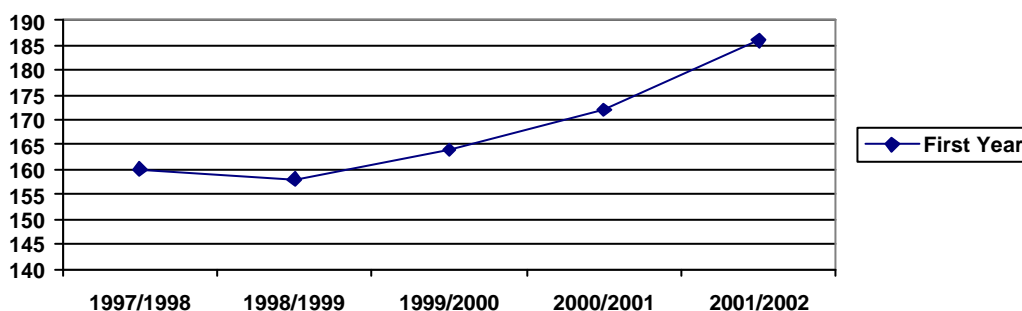
IRELAND

Higher education in Ireland is offered by universities and institutes of specialized higher education. The main stage of higher education leads to a Bachelor's Degree, which may, in certain cases, also be a professional qualification (Professional Degree). The length of study generally varies between three and four years. The Bachelor's Degree may be awarded as a General Degree, an Honours Degree and a BA (Special) Degree. The main stage of higher education leads to a Bachelor's Degree, which may, in certain cases, also be a professional qualification (Professional Degree). The length of study generally varies between three and four years. The Bachelor's Degree may be awarded as a General Degree, an Honours Degree and a BA (Special) Degree. A further two years' study after the Master's Degree are normally required for the PhD Degree. A Higher Doctorate may be awarded, after a minimum of five years (usually longer), following the award of the first Doctorate, for original work already published.

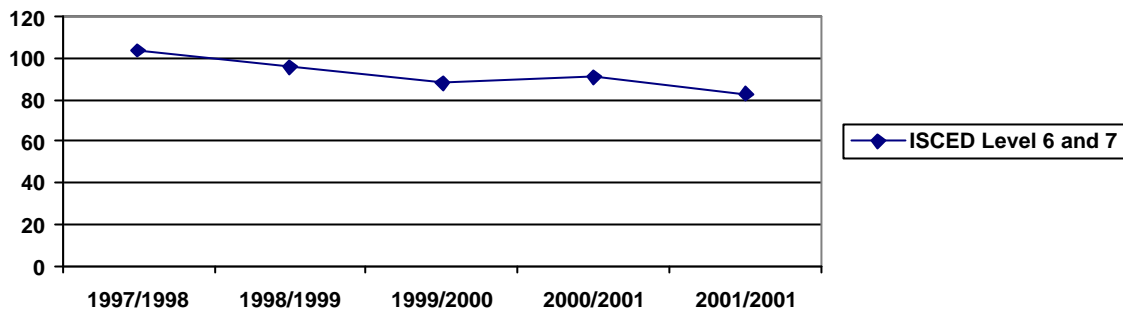
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 ISCED
97/98	160	104
98/99	158	96
99/00	164	88
00/01	172	91
01/02	186	83

Students entering a Physics degree program over the 1997/2002 period

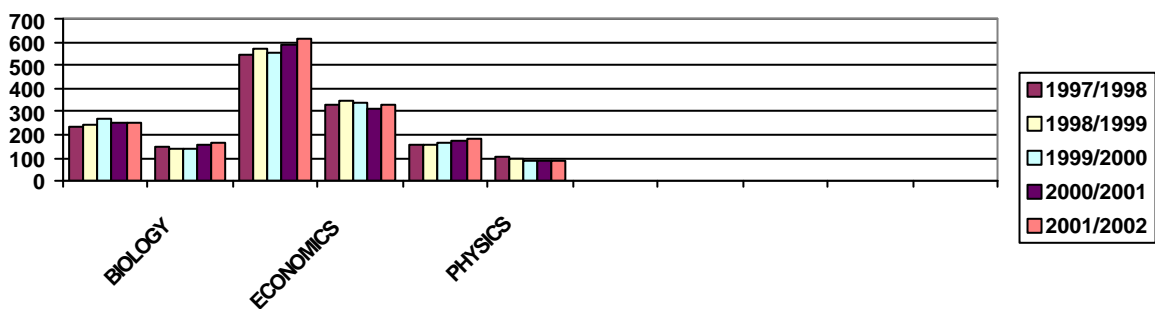


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	236	149	548	331	160	104	14838	8239
98/99	243	136	569	346	158	96	15304	8317
99/00	267	141	556	342	164	88	15479	7836
00/01	254	153	592	313	172	91	15932	8143
01/02	248	161	618	334	186	83	16117	8341



ITALY

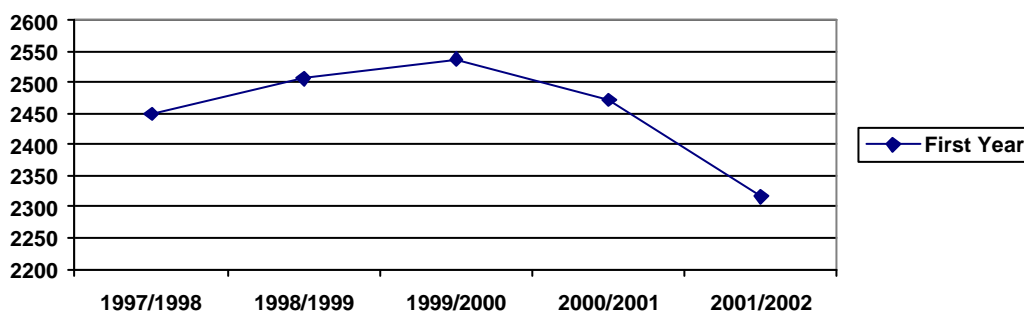
Higher education is provided by universities, technical universities, university institutes, as well as by a wide range of academies, higher institutes/schools and by a number of professional training institutions in a variety of fields. The majority of the existing university institutions were established directly by the State, while a limited number, originally set up by private entities, were later recognised by the relevant Ministry. At present (2001-2002) the university system includes 776 university institutions (52 state universities, 3 technical universities, 13 non-state legally-recognized universities, 3 state university institutes, 14 non-state legally-recognized university institutes, 2 universities for foreigners, 3 higher schools regulated by special legislation).

First level studies include Corsi di Diploma Universitario (DU), courses run by the Scuole Dirette a Fini Speciali (SDFAFS) (schools for special purposes), Corsi di Diploma Universitario (DU), both leading to the award of a Diploma Universitario. Second level studies consist exclusively in Laurea Degree courses (Curso di Laurea, CL) which last from four to five years, depending on the faculty and the course. Third level studies (Post-Lauream) consist in courses offered by Scuole di Specializzazione (specialization schools), Corsi di Dottorato di Ricerca (DR) (research doctorate programmes) and Corsi di Perfezionamento. The former aim at professional training and academic education in specialized disciplines and the latter at advanced training in research. The duration of studies at specialized schools is two to five years, depending on the field of specialization. A period of practical training is usually included, as well as some research activities. These courses are subject to a numerus clausus. They lead to the award of the Diploma di Specializzazione, that gives the right to the title of Specialista in the field concerned. Entrance to DR programmes is based on very competitive examinations. The length of studies varies between three and four years as minimum law requirement.

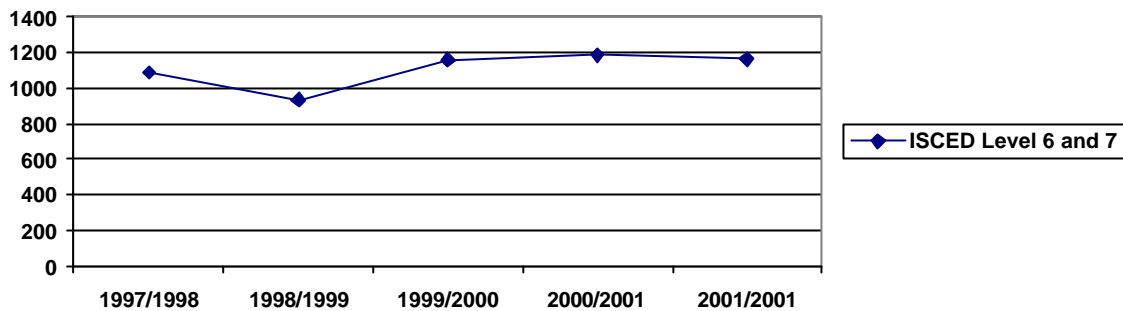
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	2449	1087
98/99	2506	936
99/00	2538	1159
00/01	2472	1187
01/02	2317	1164

Students entering a Physics degree program over the 1997/2002 period

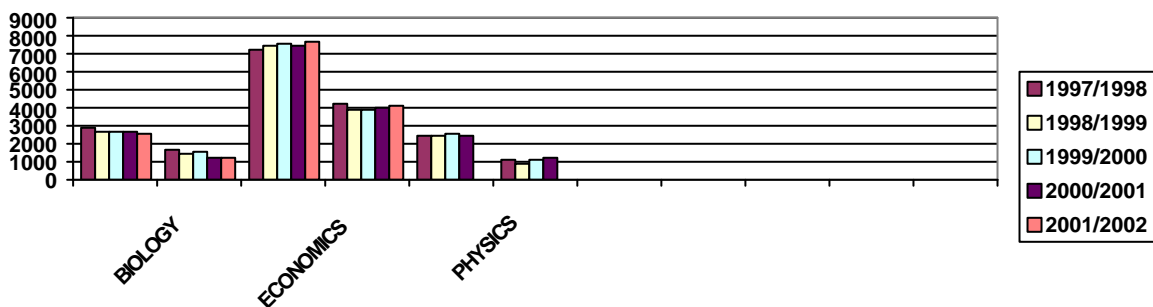


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	2933	1638	7211	4217	2449	1087	179522	103523
98/99	2718	1459	7428	3874	2506	936	182308	111526
99/00	2625	1587	7586	3927	2538	1159	188919	119337
00/01	2679	1212	7447	3997	2472	1187	186867	123516
01/02	2524	1244	7718	4139	2317	1164	188212	118644



LATVIA

There are four universities and a number of other higher education institutions in Latvia. The main split between university and non-university higher education is between the programmes rather than between the institutions since the law allows academic and professional programmes to be organised within the same institution.

The first cycle leads to the award of a Bakalaurs (Bachelor' degree), which in most cases includes the preparation of a thesis. The duration of studies varies from three to four years. Holders are eligible for further studies towards a Magistrs degree or higher professional education qualifications.

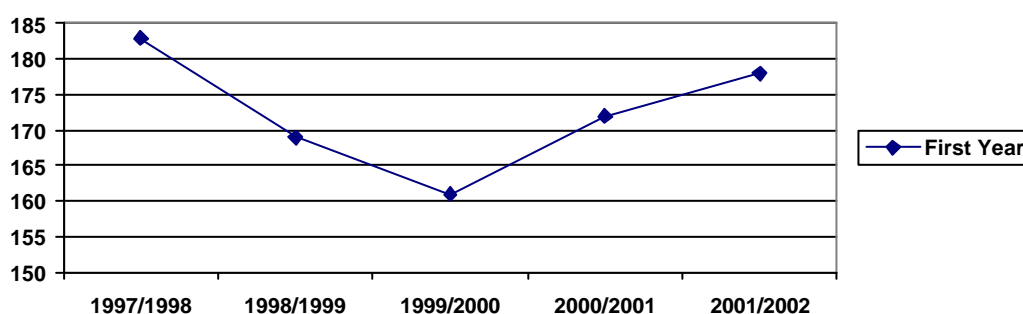
The second cycle leads to the award of the Magistrs (Master's degree), a terminal qualification of higher education awarded one to two years after the Bakalaurs. This degree also includes the presentation of a thesis. The total duration of the course of study is no less than five years.

Doctoral studies are available at both higher education institutions and research institutes. A Doctor's degree is awarded three to four years after completion of the Magistrs and following the public defence of a thesis.

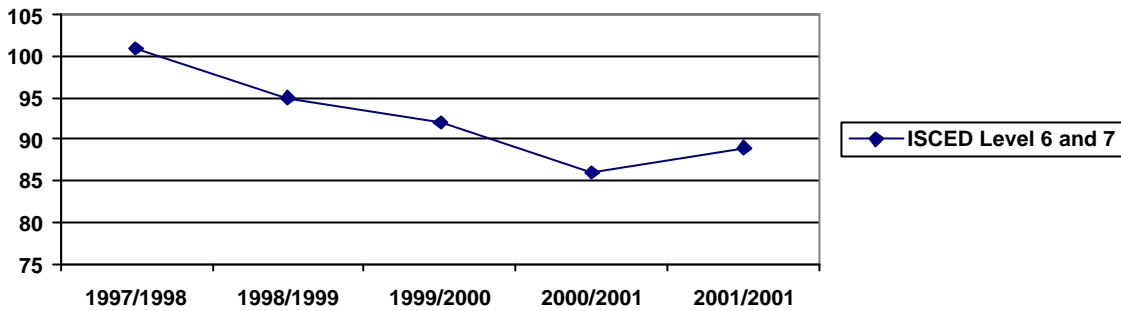
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	183	101
98/99	169	95
99/00	161	92
00/01	172	86
01/02	178	89

Students entering a Physics degree program over the 1997/2002 period

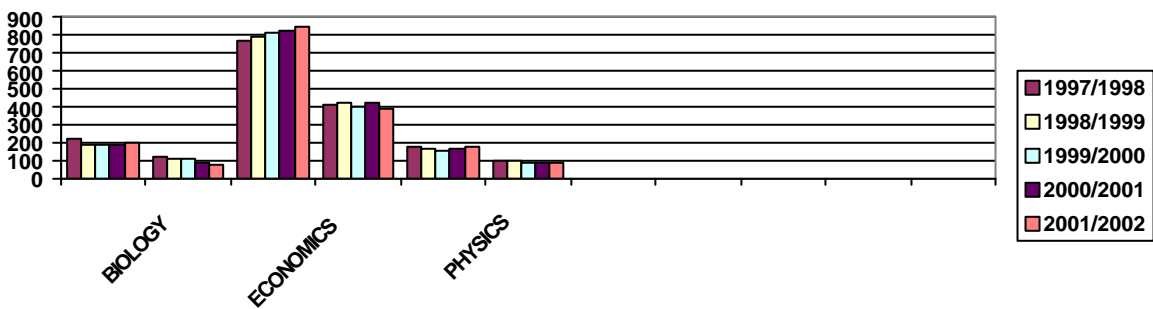


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	218	127	766	412	183	101	12872	7637
98/99	196	118	793	429	169	95	13213	7824
99/00	187	107	814	399	161	92	14526	8218
00/01	191	94	829	419	172	86	14087	8194
01/02	202	81	844	387	178	89	14219	8153



LITHUANIA

In Lithuania, The institutions are of two types: Universities and colleges - non-university higher education establishments. The status of university may be granted to a higher education establishment that performs the above functions even if its name does not include the word "university".

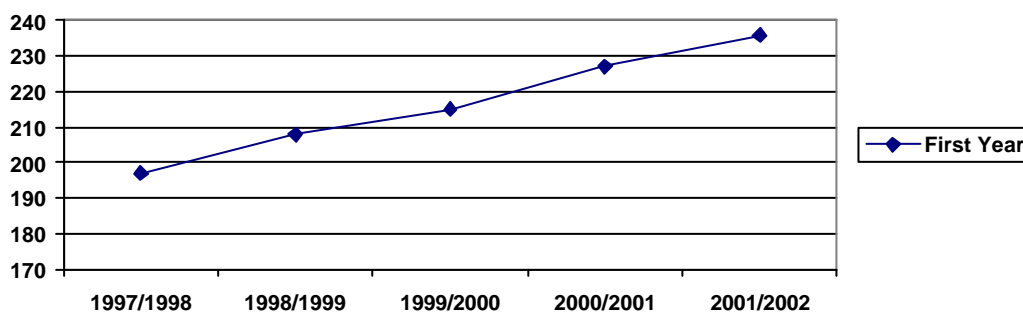
Basic studies lead to a Bachelor's Degree (Bakalauras) or a professional qualification and generally last for three-and-a-half to four-and-a-half years (140-180 credits). General admission is based on the Brandos Atestatas (BA) or an equivalent qualification. They include general theory, speciality theory and practical subject modules.

Upon completion of a basic study programme, graduates may pursue specialized professional studies or studies leading to a Master's Degree which last for one-and-a-half to two years. The duration of studies is not more than 6 study years and not less than 5 study years. Studies of the first four years are attributed to the first stage of undergraduate studies, and studies of the remaining 1-2 years to the second stage of sequential studies. The Magistras (Master) Degree or a special professional qualification is awarded after successful completion. Doctoral studies last between 3 and 4 years and can be pursued by completing the second stage, integrated studies or having comparable qualifications. Upon completion of the doctoral course, a doctoral thesis must be prepared and publicly defended in order for the candidate to qualify for the Doctorate. Doctoral studies must be jointly organized by higher education and research institutions.

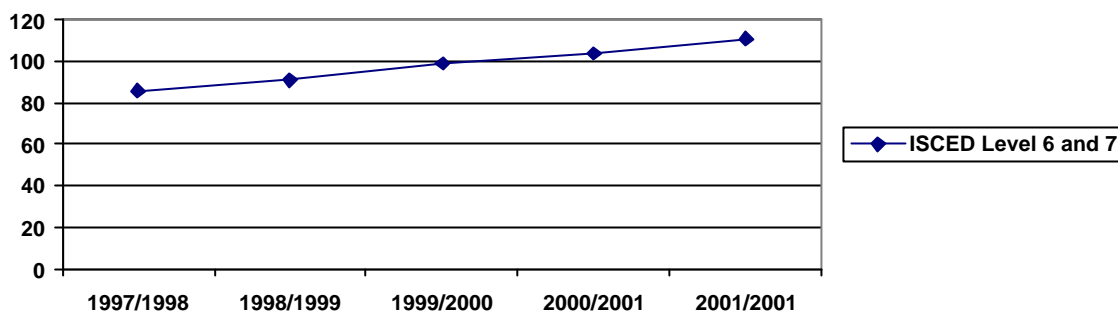
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	197	86
98/99	208	91
99/00	215	99
00/01	227	104
01/02	236	111

Students entering a Physics degree program over the 1997/2002 period

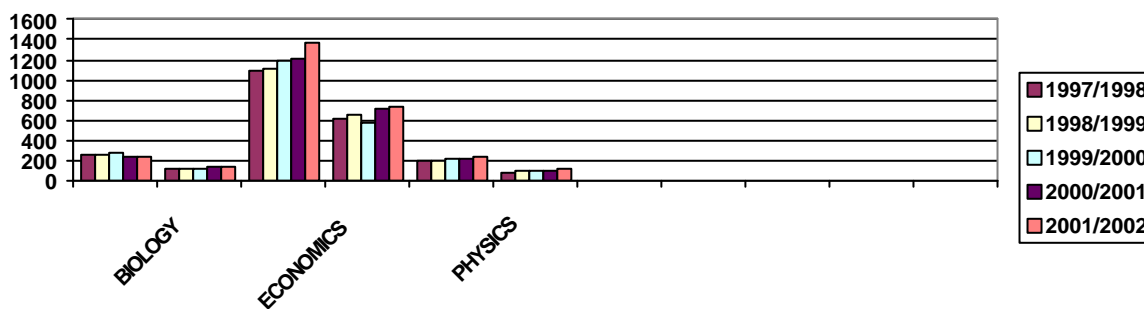


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	251	112	1097	612	197	86	15978	9607
98/99	264	121	1116	648	208	91	16321	10128
99/00	278	127	1185	583	215	99	15887	10342
00/01	237	139	1219	706	227	104	16268	9886
01/02	229	128	1363	726	236	111	16768	11297



GERMANY

Germany has an unconventional system to educate its teachers. Those students have common courses with the "traditional" students. Not to false the statistics, they have to be separate on the report.

The German students have to get a pre-diplom (called vordiplom) to access the last semesters of their undergraduate program.

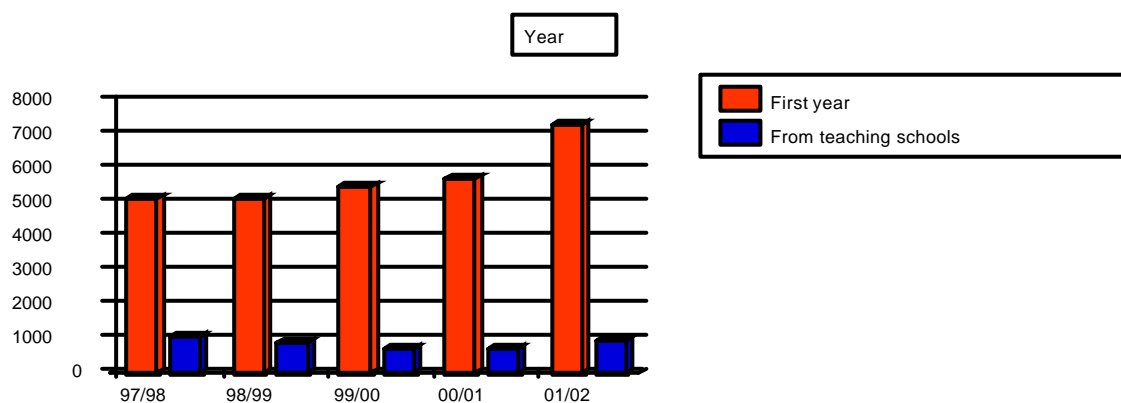
The most common degrees in Germany are:

- . Vordiplom: 4 semesters (College)
- . Diplom: 8 to 12 semesters depending the area (University)
- . Lehramt: Degree needed to teach in schools and high schools
- . Promotion: Doctorate

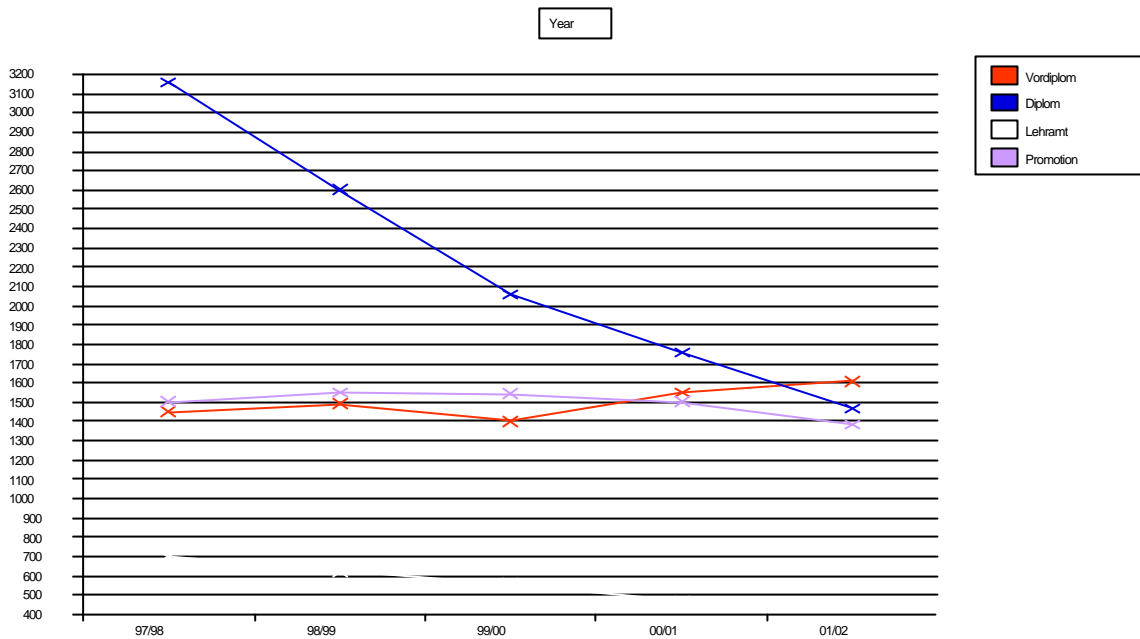
Students entering and obtaining a physics degree over the 1997/2002 period

Year	First year	From teaching schools	Vordiplom	Diplom	Lehramt	Promotion
97/98	5128	1080	1454	3155	699	1496
98/99	5147	903	1489	2602	622	1553
99/00	5449	681	1399	2055	555	1545
00/01	5680	720	1552	1762	467	1504
01/02	7321	948	1607	1467	404	1385

Students entering a physics degree program over the 1997/2002 period

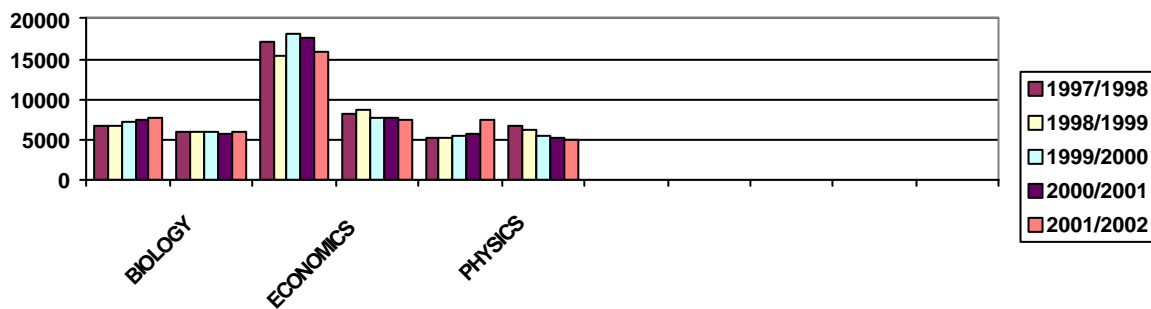


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	6736	6015	17198	8223	5128	6804	324297	206321
98/99	6601	5977	15437	8676	5147	6266	319673	178824
99/00	7185	6082	18116	7814	5449	5554	308202	169235
00/01	7535	5769	17691	7697	5680	5285	316564	186414
01/02	7718	5841	15843	7456	7321	4863	344830	176029



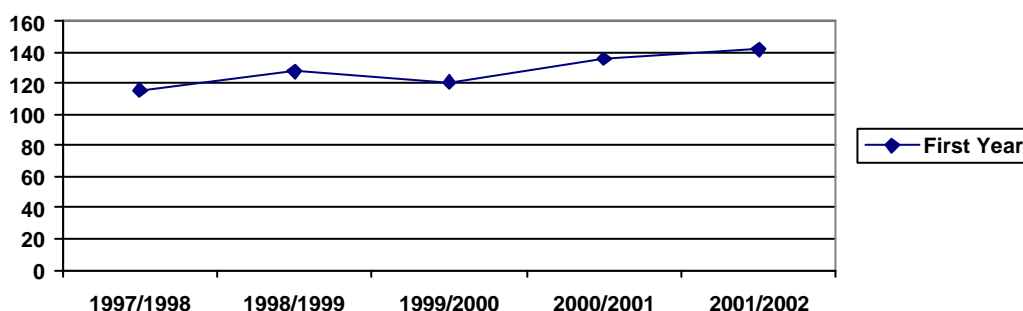
MACEDONIA

Higher education is provided by colleges and pedagogical academies offering two-year courses, as well as by two universities which offer four to six-year courses in a range of disciplines. The Law on Higher Education of 1997 stipulates that five-year programmes will be introduced in universities and higher education institutions. Macedonian higher education in line with Western European and international standards. The first-level degree of university study is obtained on completion of a four- to six-year course in one of the two universities. The exact duration of studies leading to higher level diplomas depends on the type of faculty. The Magister degree (Master of Science/Master of Arts) is awarded after two years' study followed by research and the writing of a thesis which is defended in public and approved by a mentor. The title of Doctor of Science is conferred to candidates who have obtained the Master's degree and after an approved period of research and the defence of a doctoral dissertation.

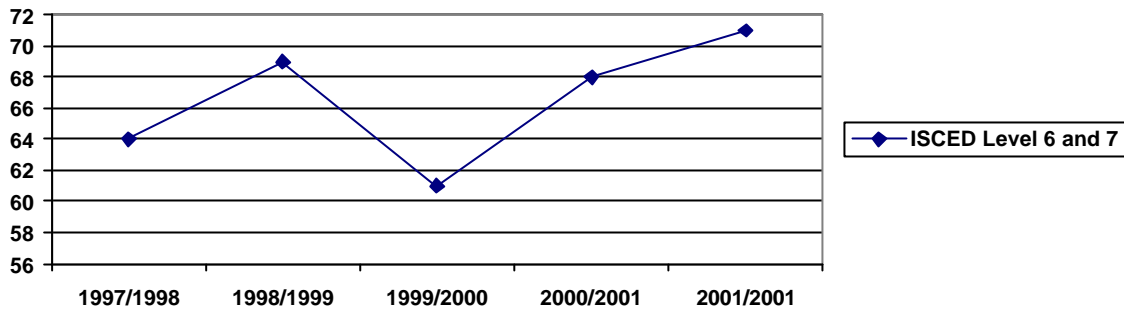
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	116	64
98/99	128	69
99/00	121	61
00/01	136	68
01/02	142	71

Students entering a Physics degree program over the 1997/2002 period

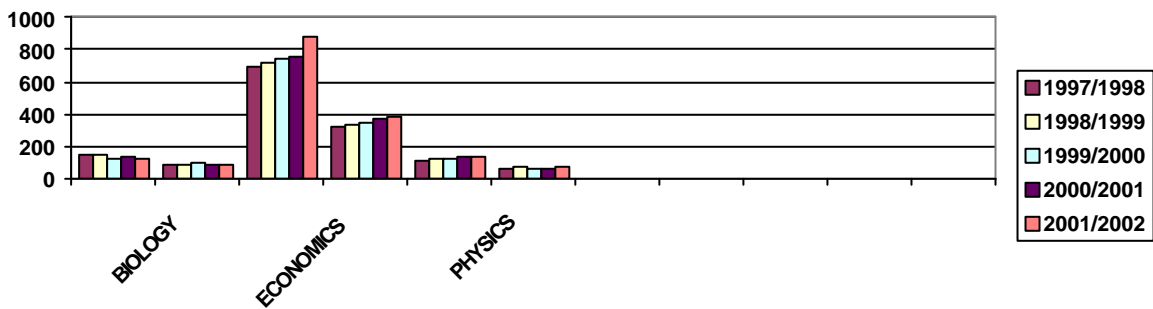


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	153	91	695	317	116	64	7361	4219
98/99	146	87	718	338	128	69	7552	4348
99/00	127	96	744	347	121	61	7713	4476
00/01	138	84	752	369	136	68	7678	4389
01/02	131	81	886	381	142	71	7819	4427



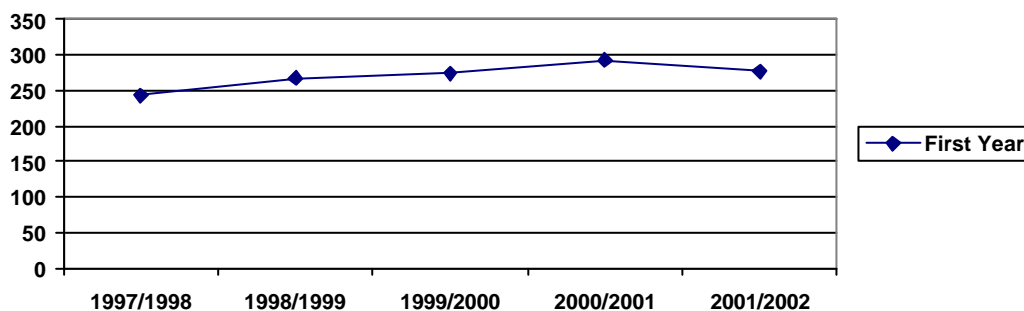
MOLDOVA

Higher education in Moldova is provided by universities, academies and institutes. There are also several private higher education institutions. Higher education institutions offer full-time courses in all fields of study, and extramural and evening courses for some of them. Full-time courses last for four to six years, depending on the field of study. A diploma is awarded at the end in a speciality (The Diploma de Licenta or Diploma de Studii superioare). Doctorate is the first advanced degree at higher level. This qualification may be obtained after either full-time (three years) or extramural (four years) courses in all disciplines. The diploma awarded after three to four years of study is a Diploma de Doctor. Doctor abilitat in ... is the second scientific degree at the highest level and it is conferred in all disciplines. Candidates must normally hold a Doctorat. The diploma awarded is Doctor abilitat in ..." ("Habilitation" Doctorate).

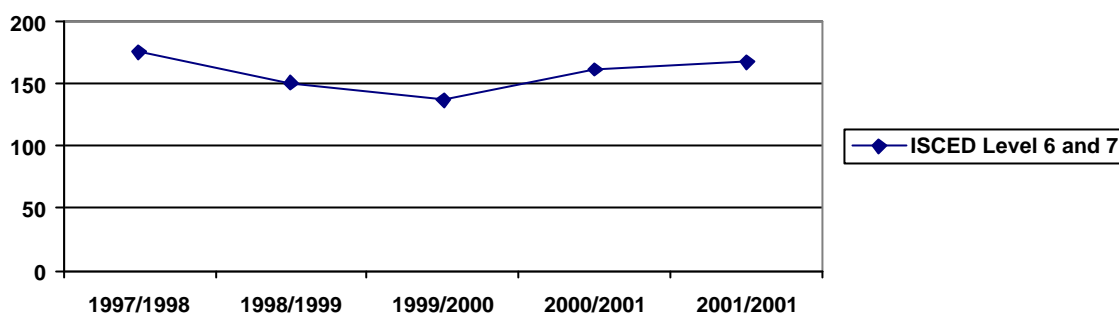
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	243	176
98/99	267	151
99/00	274	137
00/01	293	162
01/02	277	168

Students entering a Physics degree program over the 1997/2002 period

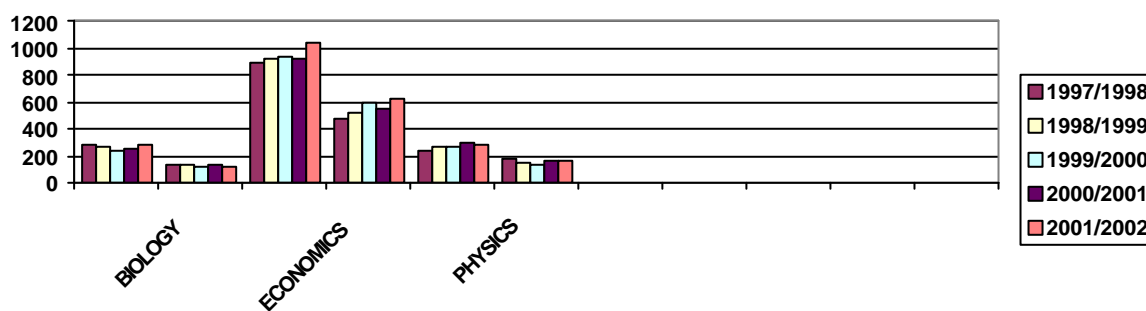


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	289	129	886	478	243	176	20115	13348
98/99	264	131	917	519	267	151	21273	12619
99/00	242	114	934	594	274	137	21562	13532
00/01	261	137	921	547	293	162	22788	12684
01/02	279	122	1048	622	277	168	21414	11826



NORWAY

Higher education in Norway is mainly offered at state institutions, notably universities (four), university colleges (six), state colleges (26) and art colleges (2). The degrees and titles that each institution can award and their professional and educational programmes, as well as the duration and specific requirements concerning breadth and depth are all laid down in a Royal Decree of 10 May 1996.

The first degree, Candidatus/Candidata Magisterii (Cand.mag.) is normally obtained after three-and-a-half years in Mathematics and Natural Sciences and four years in Arts and Social Sciences. The specialized Høgskolekandidat degrees of three and four years' duration may be built upon to obtain a Cand.mag degree.

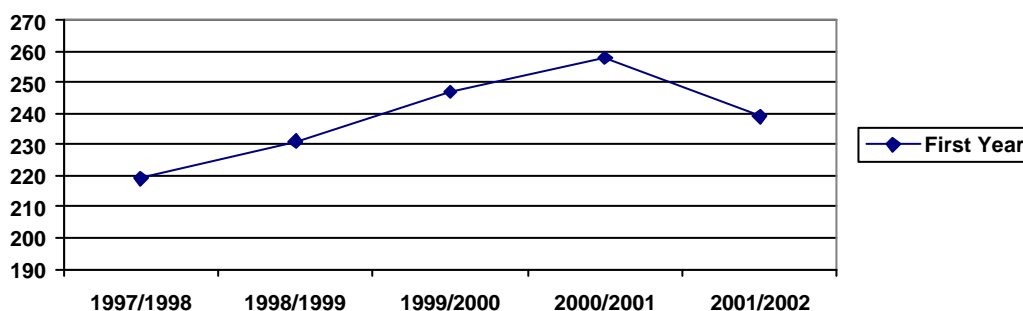
The second level (graduate/higher) degree usually consists of one-and-a-half to two years' additional study and requires a main subject based upon the intermediate level examination in the same subject as the Cand.mag degree. The degree is called Candidatus/Candidata (Cand.) followed by the name of the field of study. For internationalization purposes, some Master degree programmes have been introduced at a number of universities and colleges. In these programmes, the language of instruction and examination is English. The Master's Degree is also the new degree created by the 2001 reform and requiring two years of study beyond the Bachelor's Degree.

Doctor's degree programmes generally consist of three years of study following completion of the second level degree or other professional degree programmes.

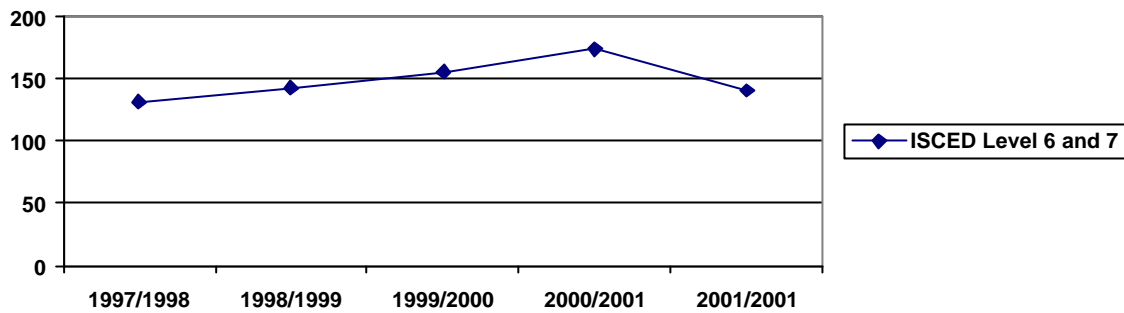
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	219	132
98/99	231	143
99/00	247	156
00/01	258	174
01/02	239	141

Students entering a Physics degree program over the 1997/2002 period

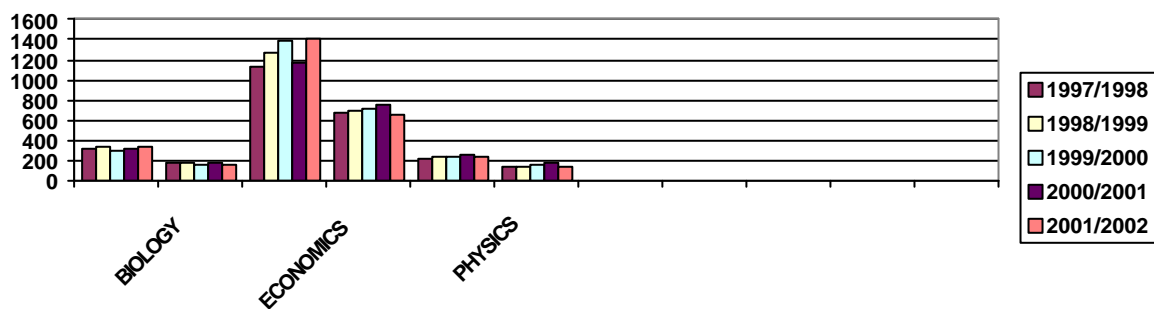


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	316	187	1139	672	219	132	16097	9419
98/99	339	176	1276	705	231	143	17704	9718
99/00	304	153	1394	721	247	156	18576	10173
00/01	321	169	1168	744	258	174	16487	10641
01/02	348	162	1401	659	239	141	19326	11232



NETHERLANDS

The Netherlands higher education system is a binary system, composed of Wetenschappelijk Onderwijs (WO - university education) and Hoger Beroepsonderwijs (HBO - professional higher education). In addition, there is the Open Universiteit (OU - Open University) which offers fully recognized university degree programmes through distance education.

The first stage consists of a one-year Propedeutisch course. The Certificate awarded is the Getuigschrift van het Propedeutisch Examen.

The second stage consists of two types of education: HBO and Doctoraal. HBO education combines practical training with theoretical instruction. The HBO programme lasts for four years in all fields. An essential part of each study programme is the 'stage' (internship) and the "scriptie", or major paper, written in the final year.

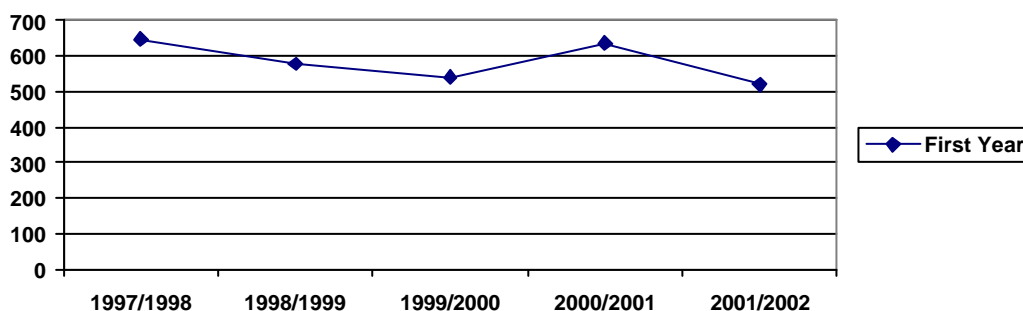
The purpose of the Doctoraal degree programme is to give students a thorough background in a chosen discipline as well as the research skills necessary to master it. Most university programmes require the completion of three years after the propedeuse.

The Dutch Doctoraat is obtained through the 'Promotie'. It is a research degree which entitles the holder to the title of Doctor (dr.), the highest university degree in the Netherlands. Candidates are required to carry out the necessary research and to write a doctoral dissertation over a period of four years.

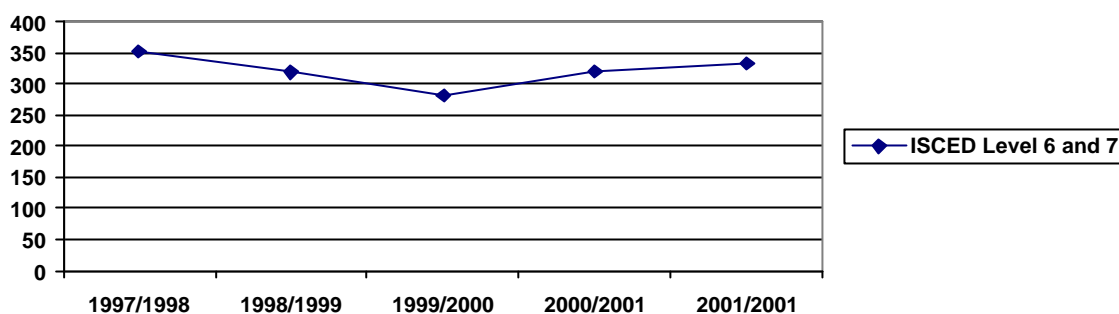
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	648	353
98/99	577	319
99/00	541	282
00/01	636	321
01/02	519	334

Students entering a Physics degree program over the 1997/2002 period

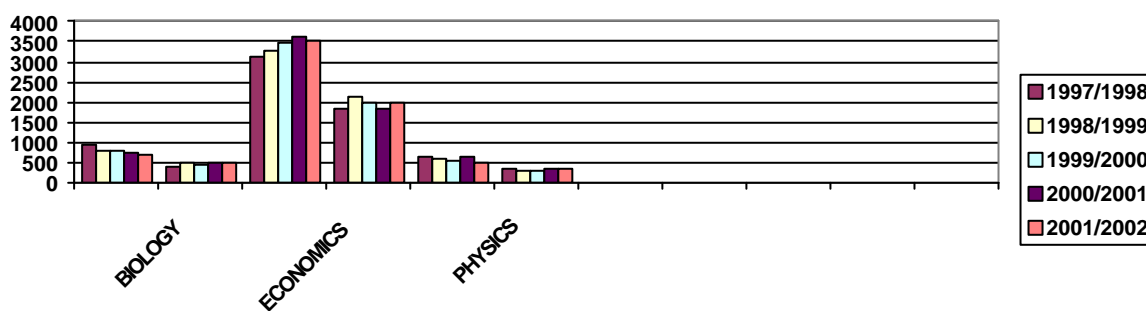


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	941	414	3103	1819	648	353	48089	28918
98/99	778	482	3264	2137	577	319	51348	26311
99/00	813	465	3448	1986	541	282	52779	27649
00/01	754	472	3639	1857	636	321	54484	25816
01/02	699	489	3541	1976	519	334	51807	24324



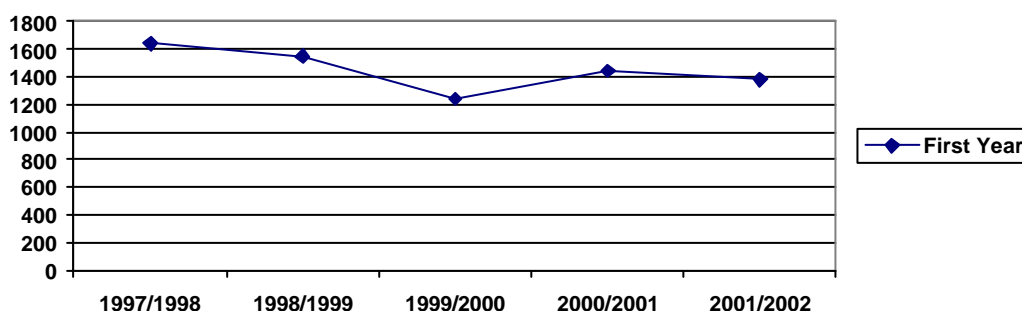
POLAND

The higher education system comprises both state and non-state institutions. First level studies are organized both by university-type higher education institutions and the institutions of higher professional education (wyzsze szkoly zawodowe). The graduates obtain the dyplom ukonczenia studiów wyzszych (diploma of completion of higher studies) and are awarded the professional title of licencjat or inzynier after completing the education and preparing a thesis or diploma project. The studies of the second stage are organized in the university-type higher education institutions as uniform studies lasting 5-6 years or as complementary studies, lasting 1.5 - 2 years, and offered to holders of the professional titles of licencjat or inzynier. The graduates receive dyplom ukonczenia studiów wyzszych (diploma of completion of higher studies) and are awarded the title of magister or one of its equivalents after submitting and defending of a thesis or a diploma project. The academic degree of doktor can be obtained in two ways: by students of doctoral (postgraduate) studies, lasting usually 3-4 years, or by persons who combine their professional work with academic research and elaboration of a dissertation. All candidates must hold the professional title of magister or equivalent. To be awarded the degree of doktor, the candidate must submit and successfully defend a doctoral dissertation assessed positively by two supervisors and pass doctorate examinations. The degree of doktor habilitowany is awarded to candidates who already hold the degree of doktor. It can be obtained either by academic staff of higher education institutions and research units, or by persons who combine their research work with other professional activities. To be awarded the academic degree of doktor habilitowany the candidate must: have remarkable scientific or artistic achievements; submit a habilitation dissertation which contributes to the development of a given scientific discipline; receive a favourable assessment of his/her dissertation from three supervisors; pass a habilitation examination and deliver a favourably assessed habilitation lecture.

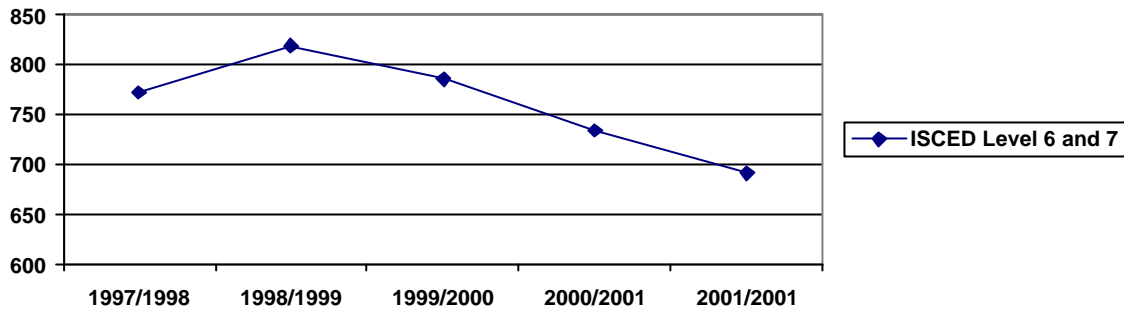
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	1641	772
98/99	1548	819
99/00	1239	786
00/01	1445	734
01/02	1379	691

Students entering a Physics degree program over the 1997/2002 period

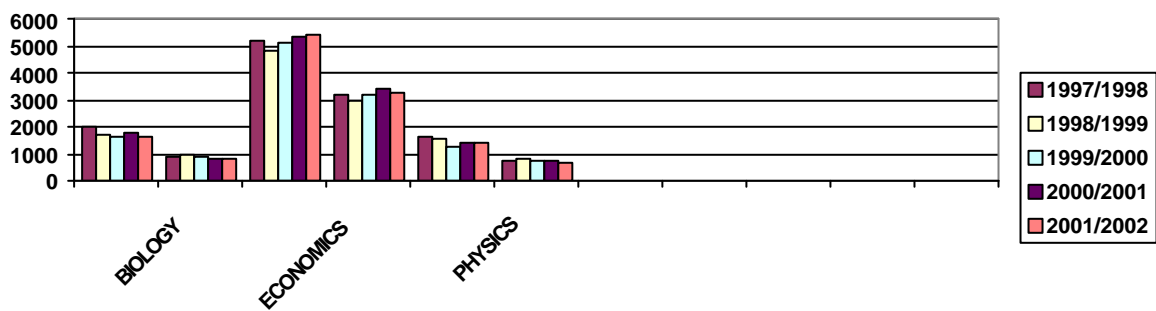


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	1974	897	5209	3213	1641	772	172449	93527
98/99	1742	996	4819	2976	1548	819	173829	86912
99/00	1614	858	5115	3186	1239	786	176616	91376
00/01	1809	797	5328	3418	1445	734	174908	92508
01/02	1657	852	5459	3259	1379	691	173623	91986



PORTUGAL

Higher education in Portugal is divided into two subsystems: university education and non-university higher education (polytechnical education), and it is provided in autonomous public universities, private universities, polytechnic institutions and private higher education institutions of other types. In universities, the first stage leads to the award of the Bachelor after 3 years. The Licenciado is conferred after completion of a course usually lasting for 4 years. Many courses, however, last for 5 or even 6 years. Most Licenciatura courses are organized in credit units, but many are still organized per semester or academic year.

The Mestre is an advanced degree in a specific scientific field, indicating capacity for conducting practical research. Courses usually last for 4 semesters and include lectures and the preparation and discussion of an original dissertation.

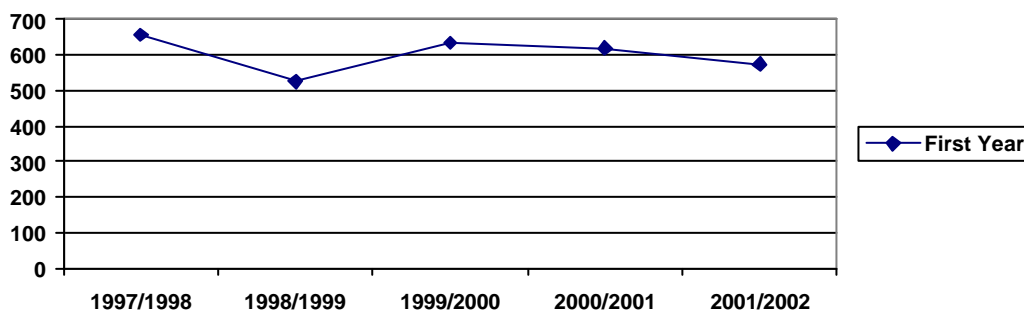
The Doutor is conferred by universities to those who have passed the Doctorate examinations and have defended a thesis.

Agregação is the highest qualification reserved to holders of the Doutor degree. It requires the capacity to undertake high level research and special pedagogical competence in a specific field. It is awarded after passing specific examinations.

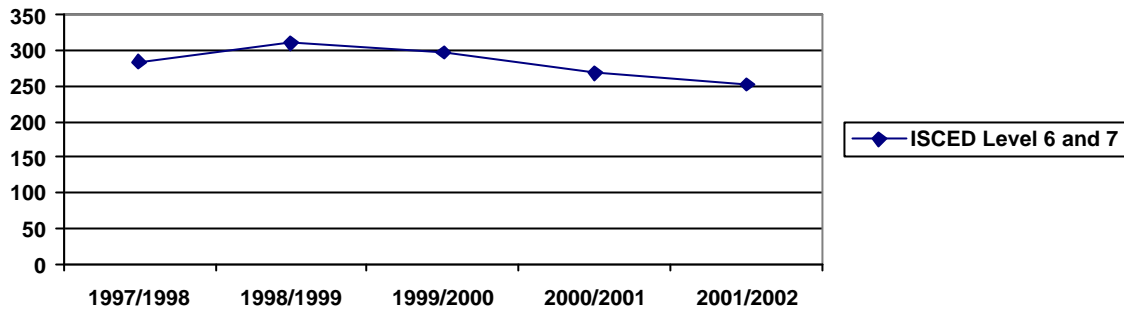
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	657	284
98/99	526	311
99/00	634	297
00/01	619	268
01/02	574	252

Students entering a Physics degree program over the 1997/2002 period

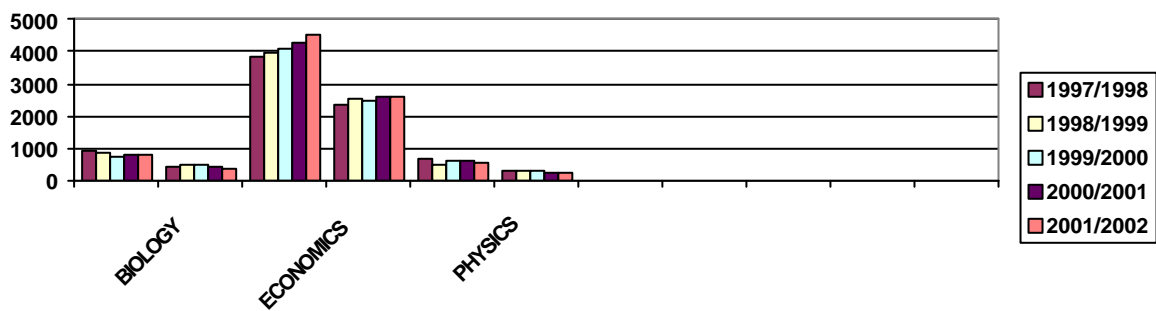


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	941	461	3836	2376	657	284	37218	20187
98/99	879	486	3998	2526	526	311	38929	19464
99/00	763	493	4117	2487	634	297	37441	21355
00/01	817	404	4287	2618	619	268	36766	21864
01/02	776	367	4532	2589	574	252	39443	22308



ROMANIA

Higher education in Romania is offered in both public and private higher education institutions. These include universities, academies, politechnics, institutes and colleges, organized in specialized departments. In accordance with its objectives, university education comprises: short university education carried out in university colleges (3 years), long university education (duration 4 to 6 years) and postgraduate university education (duration 1 to 2 years).

The first stage of university-level study comprises short-term university education carried out in university colleges (duration 3 years) or long-term university education (duration 4 to 6 years, according to the profile).

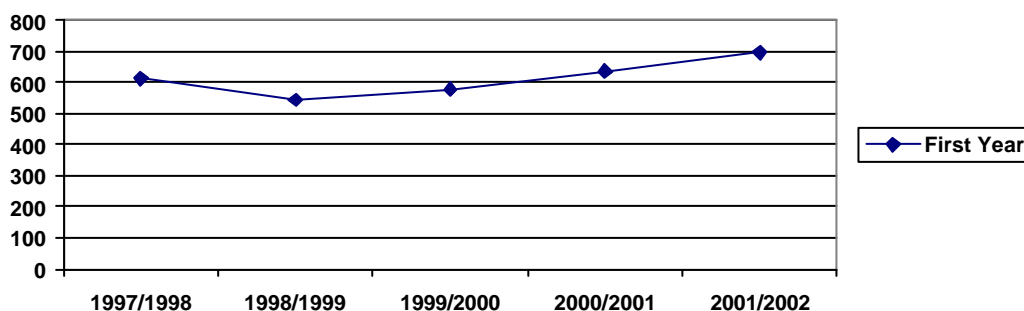
Education for further studies are of 1 - 2 years' duration, full-time only. It may only be attended by graduates with a graduation Diploma and with good results. Holders of a first degree may either continue their training by taking a one- or two-year Master programme (which leads to an examination and the Diploma de Studii Aprofundate), or take specialist programmes the length of which may vary according to the field of study, but may not be less than one year (leading to an examination and the Diploma de Absolvire).

The Doctorate in Romania is the highest postgraduate stage of professional specialization, lasting for 4 - 6 years. There is only one type of Doctorate, which is comparable to the PhD. Doctorate studies can be carried out either in full-time courses (up to four years) or in extra-mural courses (up to six years).

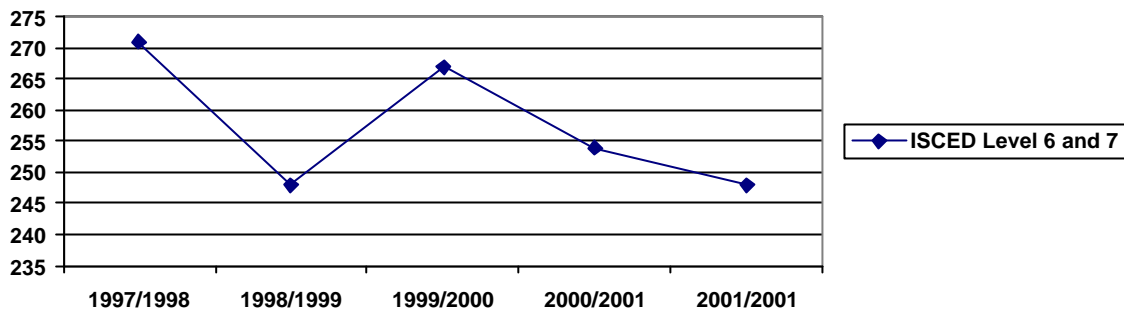
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	613	271
98/99	544	248
99/00	579	267
00/01	636	254
01/02	697	248

Students entering a Physics degree program over the 1997/2002 period

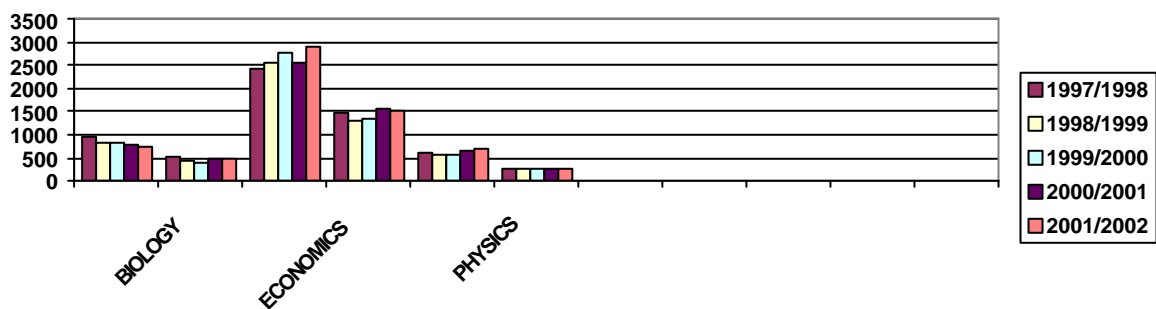


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	954	532	2442	1478	613	271	59041	34448
98/99	817	441	2567	1316	544	248	63876	33218
99/00	832	386	2786	1337	579	267	61458	31384
00/01	779	467	2539	1584	636	254	58773	36821
01/02	761	478	2918	1512	697	248	58318	34623



SLOVAK REPUBLIC

All higher education institutions have the same legal standing and social function. They provide not only higher education, but also research and artistic activities. Higher education institutions have the exclusive right to award academic degrees.

The first stage usually lasts for three or four years. After completion, graduates are granted Certificates and awarded the degree of "Bakalár".

Magisterské, Inžinierske, Doktorské štúdium (Master studies): Complete university study lasts for four to six years and consists in research. Graduates of the fields of study in which the academic degree of Magister is awarded may sit for the Examina Rigorosa, which also includes the defence of a dissertation. Upon successfully completing it, students are awarded the following academic degrees: in Natural Sciences the Doktor Prírodných Vied .

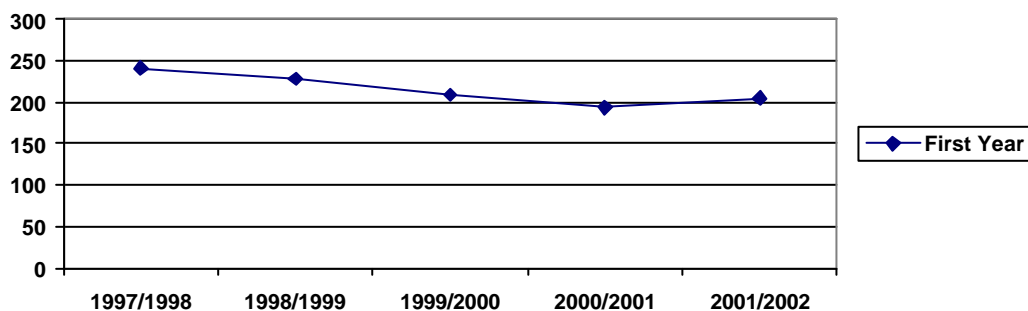
Doctoral studies (PhD) require three years of full-time study, or five years of part-time study.

The DrSc. is awarded to outstanding researchers after the defence of their thesis and for their scientific and research work.

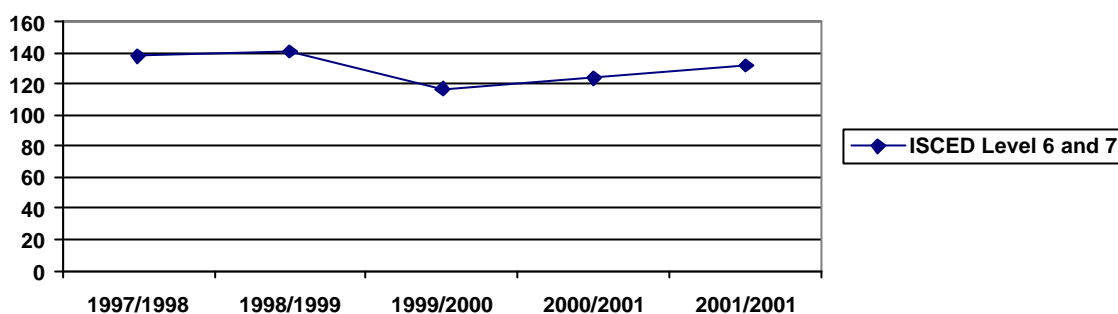
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	241	138
98/99	228	141
99/00	209	117
00/01	194	124
01/02	205	132

Students entering a Physics degree program over the 1997/2002 period

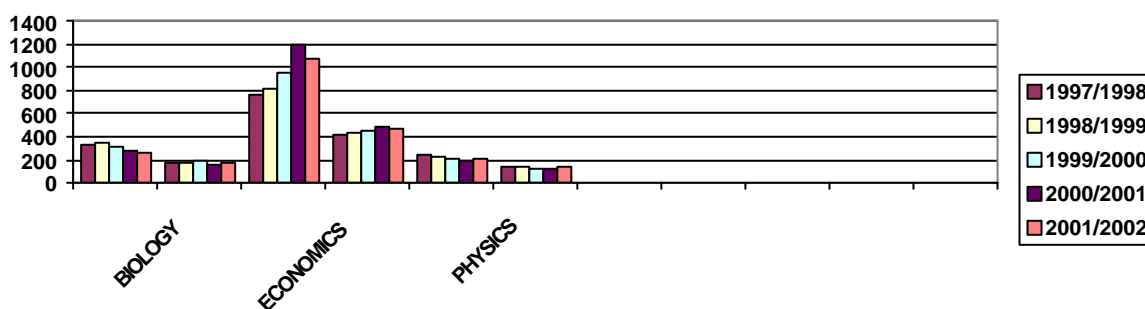


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	328	183	771	412	241	138	19736	13232
98/99	347	176	814	428	228	141	20881	12558
99/00	311	189	956	454	209	117	21632	13147
00/01	284	164	1189	489	194	124	21553	14539
01/02	268	171	1075	463	205	132	22946	13211



SLOVENIA

Higher education institutions comprise universities, faculties, art academies or professional colleges. Slovenia has two universities with 38 members, e.g. faculties, art academies and professional colleges and nine single institutions of higher education (samostojni visokošolski zavodi) established as private institutions.

Undergraduate studies: University-level study programmes are of two kinds: professional and academic:- Professionally-oriented programmes are somewhat shorter than academic ones. Officially, they last for three to four years, which, including the Absolventsko Leto makes a total of four or five years.

The titles are Diplomirani (abbreviated as dipl.) or Diplomirani Inženir (abbreviated as Dipl. Inž). Students can enter the labour market or continue their studies at the post-graduate level and obtain a Specialist Degree (Specializacija) or in certain cases a Magisterij.

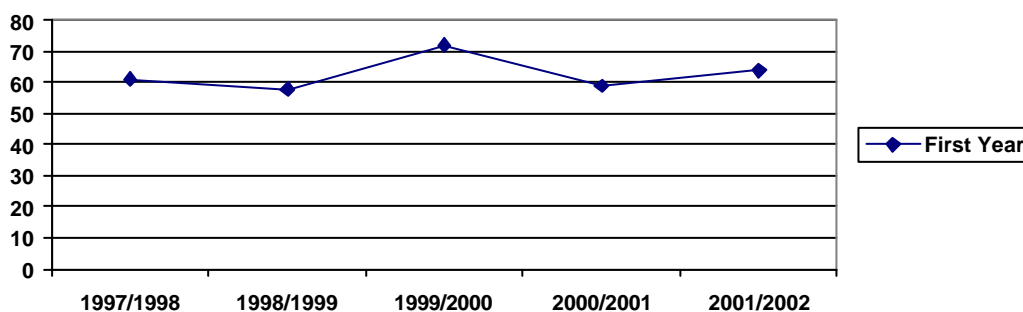
At the post-graduate level, programmes lead to the degrees of Specializacija, Magisterij and Doktorat Znanosti. The entrance requirement for studies leading to the Specializacija is a first degree.

Programmes last between one and two years and end with the defence of a thesis. Students who have successfully defended a thesis are awarded a Specializacija degree with the professional title of Specialist in a specific field.

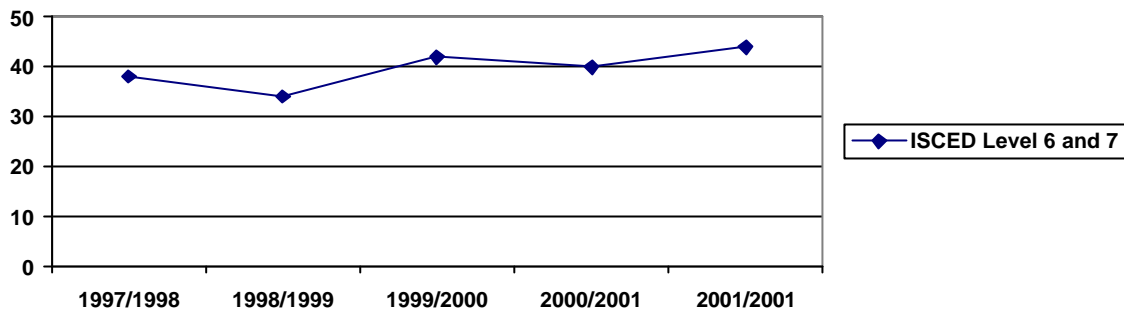
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	61	38
98/99	58	34
99/00	72	42
00/01	59	40
01/02	64	44

Students entering a Physics degree program over the 1997/2002 period

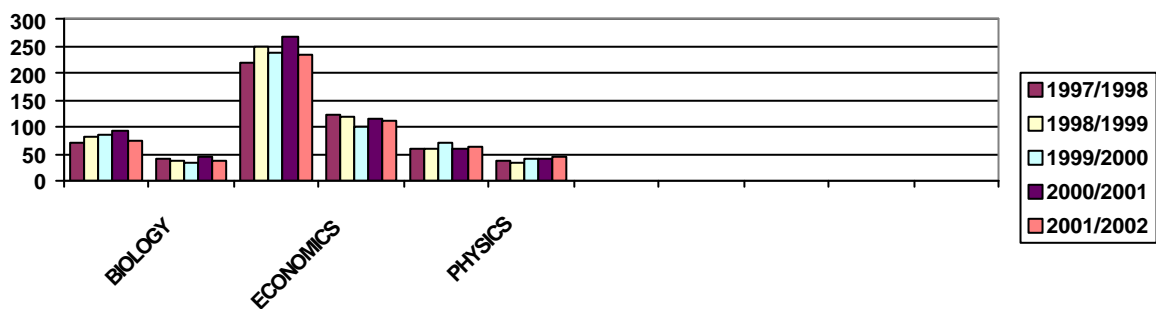


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	72	41	221	124	61	38	5621	2748
98/99	81	38	249	118	58	34	5814	2857
99/00	86	34	238	102	72	42	5963	3319
00/01	94	43	269	117	59	40	6256	3287
01/02	75	37	234	113	64	44	6149	3476



SPAIN

Higher education is mainly provided by both public and private universities. Universities are divided into facultades universitarias, escuelas técnicas superiores, escuelas universitarias, institutos universitarios, and other centres, notably the colegios universitarios.

The first cycle of university studies (short term courses), which is taken in Escuelas Técnicas Superiores, Escuelas Universitarias and Facultades lasts for three years and leads to the Diplomado, Ingeniero Técnico or Arquitecto Técnico degrees. These courses lead to long term courses.

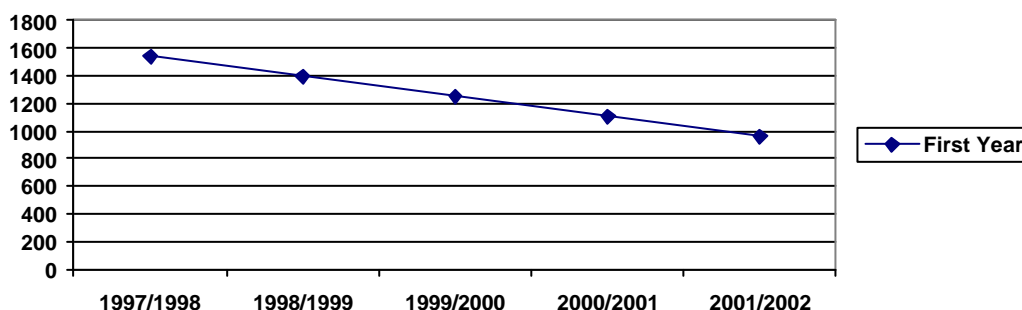
The courses of study leading to Licenciado, Ingeniero and Arquitecto degrees consist of first cycle and second cycle studies (long term studies) but a degree is awarded only when the studies of both cycles have been completed successfully.

The third stage is open to holders of Licenciado or Ingeniero degrees and leads to the Doctor's degree (Título de Doctor) which is awarded after at least four years' further study and research, and after the submission and defence of a thesis. Another postgraduate degree, although it is not officially recognized (Título propio del Centro) is the "Master's" or Maestría degree, awarded after 1 or 2 years of further study.

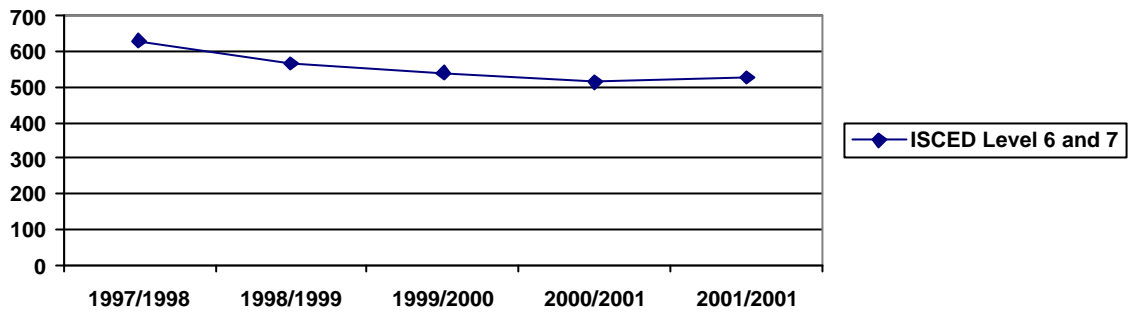
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	1539	631
98/99	1396	566
99/00	1248	539
00/01	1103	514
01/02	958	527

Students entering a Physics degree program over the 1997/2002 period

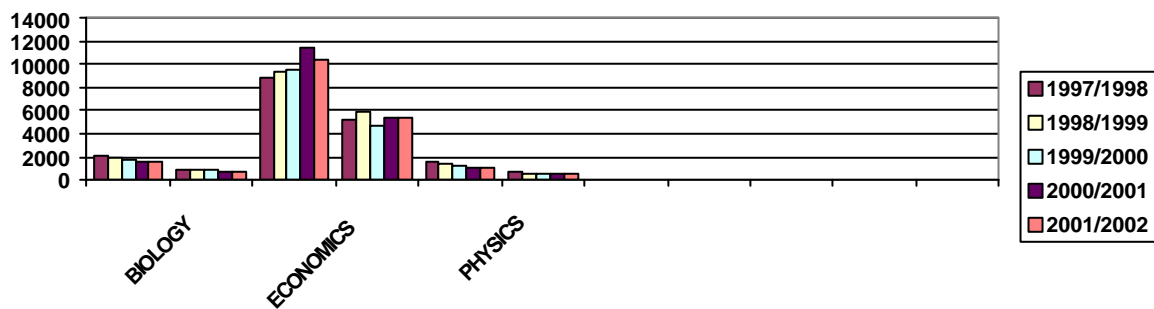


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	2136	938	8904	5227	1539	631	136321	72128
98/99	1861	857	9384	5924	1396	566	142285	74525
99/00	1783	826	9616	4607	1248	539	166819	79642
00/01	1629	686	11478	5441	1103	514	152324	81511
01/02	1513	651	10338	5347	958	527	160836	83348



SWEDEN

The Swedish system includes not only traditional university studies but also different kinds of Training, It is the responsibility of the central government, regional authorities and private interests. Higher education is divided into undergraduate studies (courses combined towards a first degree) and postgraduate studies and research.

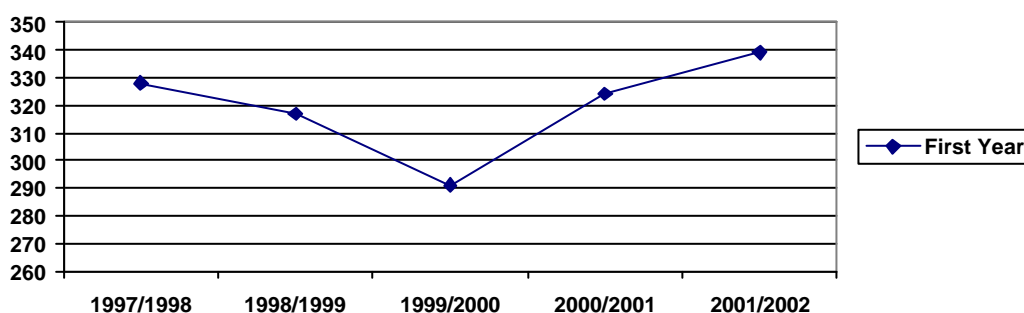
All basic higher education is offered in the form of courses. There is scope for individual choice but students may combine different courses into a degree programme. Study programmes are divided into credits. The Bachelor's Degree (Kandidatexamen) is conferred after the completion of at least 120 credits (three years' full-time study).

The Licentiatexamen (Licentiate degree) requires 80 points (two years of study and research) including a larger thesis, after completion of at least 120 points at undergraduate level. This degree can also be awarded as an intermediate degree towards the Doktorsexamen. A Doctorate degree requires a minimum of four years' full-time study beyond completion of at least 120 points at the undergraduate level.

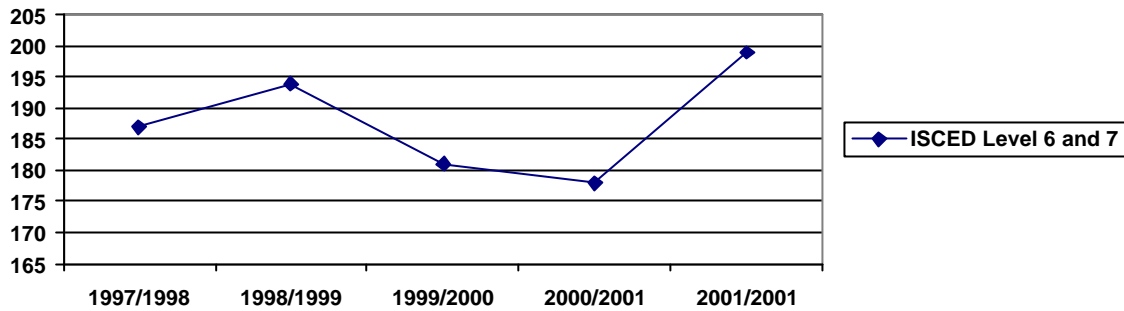
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	328	187
98/99	317	194
99/00	291	181
00/01	324	178
01/02	339	199

Students entering a Physics degree program over the 1997/2002 period

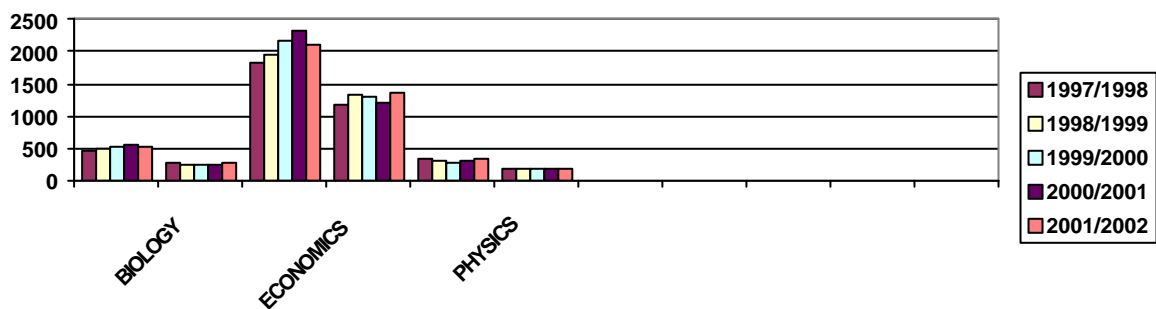


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	476	269	1828	1176	328	187	32114	19524
98/99	499	251	1964	1328	317	194	34148	21316
99/00	527	237	2172	1287	291	181	31927	17853
00/01	564	263	2337	1198	324	178	34519	19618
01/02	536	282	2094	1372	339	199	32930	18804



SWITZERLAND

In Switzerland, the higher education system at University-level is provided by ten cantonal Universities and two federal Institutes of Technology. However, higher education is also provided by the seven newly created Fachhochschulen and advanced Vocational Colleges. Private Universities are basically only to be found in the field of post-graduate studies.

The first period of long-cycle study is essentially devoted to broadly-based studies. It takes 2 to 6 semesters and generally ends with intermediate examinations called Vordiplomprüfungen, Akzessprüfungen, Demi-licence, depending on the subject and the university.

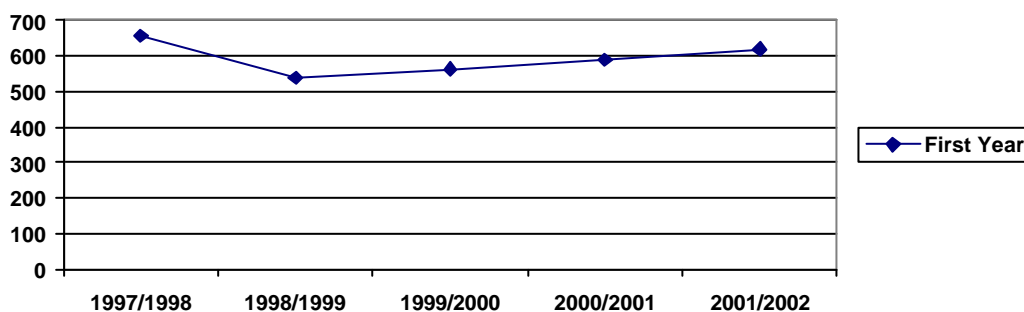
The second stage (Hauptstudium) is devoted to in-depth study often with some specializations. After a further four semesters, a Lizentiat/Licence is conferred for most fields.

In the course of the implementation of the Bologna Declaration, several universities or subjects at individual universities have already adjusted their curriculum to the Bachelor/Master system.

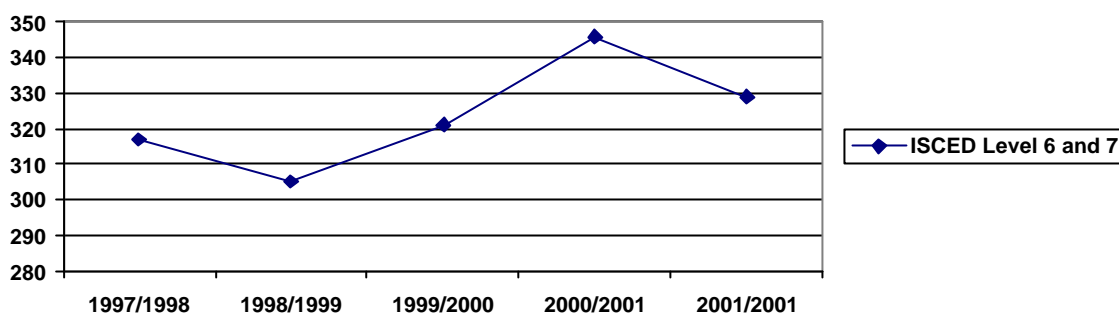
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	656	317
98/99	538	305
99/00	563	321
00/01	589	346
01/02	619	329

Students entering a Physics degree program over the 1997/2002 period

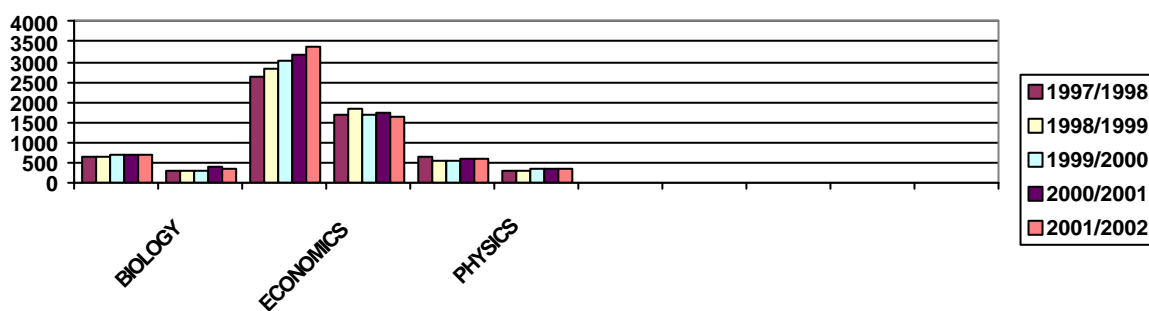


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	653	287	2641	1678	656	317	35676	21809
98/99	639	314	2819	1816	538	305	37823	22284
99/00	679	301	3037	1695	563	321	36947	21329
00/01	696	379	3184	1721	589	346	37449	24485
01/02	668	364	3378	1655	619	329	39712	23719



UNITED KINGDOM

Higher education is provided by three main types of institutions: universities, colleges and institutions of higher education and art and music colleges. All universities are autonomous institutions, particularly in matters relating to courses. They are empowered by a Royal Charter or an Act of Parliament. As a result of the Further and Higher Education Act of 1992, the binary line separating universities and polytechnics was abolished and polytechnics were given university status (i.e., the right to award their own degrees) and took university titles.

The first stage lasts for three or four years and leads to the award of a Bachelor's Degree in Arts, Science or other fields (Technology, Law, Engineering, etc.). In some Scottish universities the first degree is a Master's Degree. The Bachelor's Degree is conferred as a Pass Degree or an Honours Degree where studies are more specialized. The Bachelor's Honours Degree is classified as a First Class Honours, a Second Class Honours or a Third Class Honours.

A Master's Degree is conferred after one or two years' study following upon the Bachelor's Degree. Study is in a specialized field. In some cases, the degree is awarded solely after a written examination but candidates must usually submit a memoir.

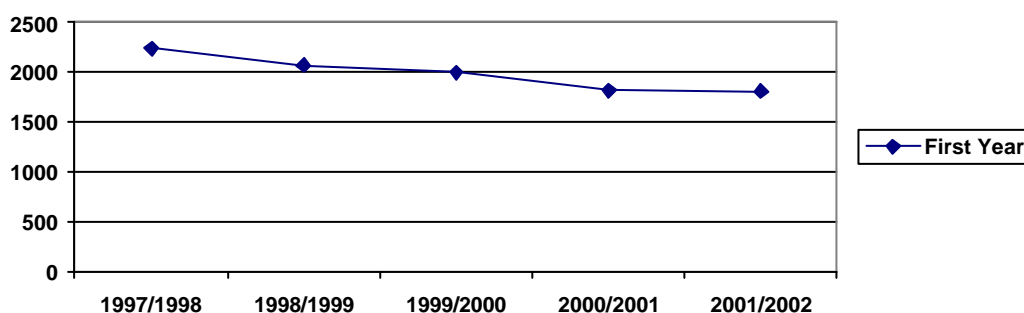
The third stage is that of pure research. At a university, it leads, after two years of additional study and the successful presentation of a thesis, to the Master of Philosophy (MPhil) Degree. After usually three years' further study beyond the Master's Degree, the candidate may present a thesis for the Doctorate of Philosophy (D.Phil. or Ph.D.).

A further stage leads to Higher Doctorates which may be awarded by a university after a candidate, usually a senior university teacher, has submitted a number of learned, usually published, works.

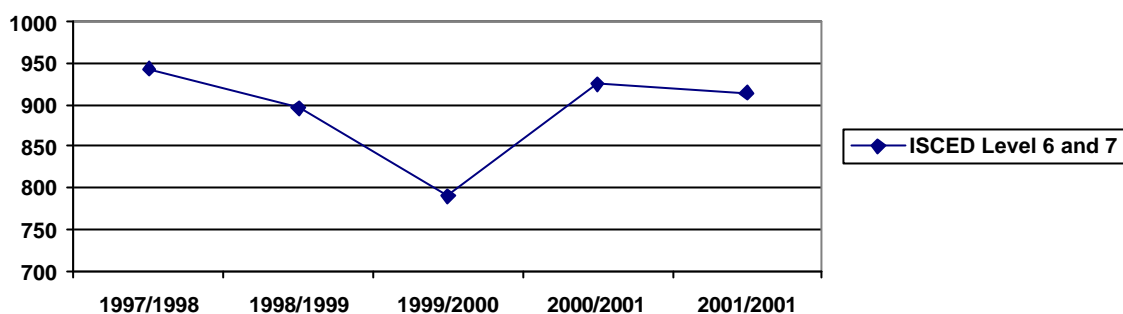
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	2241	944
98/99	2075	896
99/00	2000	790
00/01	1818	925
01/02	1807	915

Students entering a Physics degree program over the 1997/2002 period

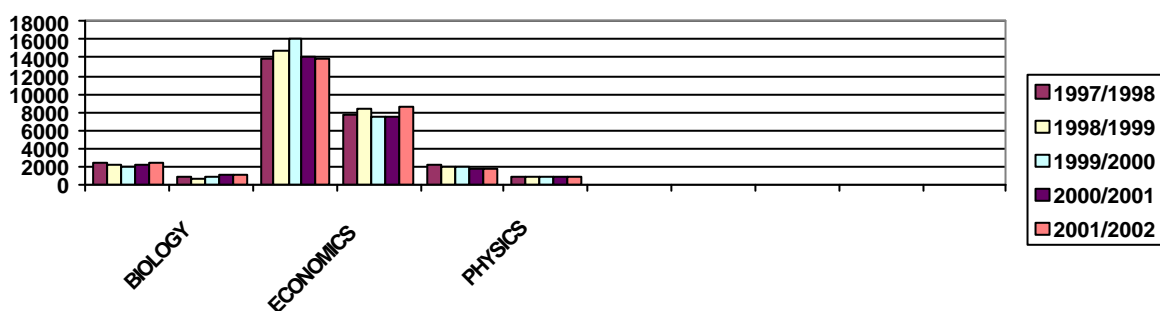


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	2368	833	13856	7623	2241	944	308236	172543
98/99	2118	743	14818	8265	2075	896	302683	181345
99/00	1989	780	15988	7498	2000	790	307677	179876
00/01	2137	1055	14137	7564	1818	925	311635	185391
01/02	2314	1120	13912	8493	1807	915	329218	192673



UKRAINE

Higher education in Ukraine is administered by the Ministry of Education which coordinates the activities of higher schools and supervises the higher schools which are under other ministries. The degree system is under reform: The old system had only one stage of undergraduate studies, the degree of "Specialist", awarded after 5 years of study. The new system comprises two stages: undergraduate and graduate, with several degree levels.

The academic and professional diploma of Bakalavr (BA, BEd., BMed.) is generally awarded after four years of successful study (six years for Medicine). The Bakalavr programme comprises basic higher education and professional training in a given professional field. It is an intermediate degree. The degree (Diplom) of Specialist is awarded after five or six years of study, depending on the type of institution.

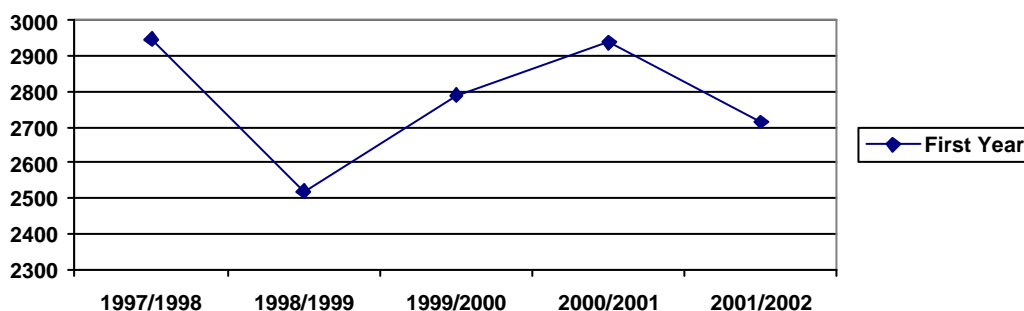
The Magister (Master's Degree) is awarded on the basis of a Bachelor's Degree or Specialist's qualification generally one to two years after the first degree. Students must pass final examinations and defend a thesis.

Ukraine keeps a two-degree system at doctoral level: Kandydat nauk (Candidate of Sciences, comparable to the Ph.D.), and Doctor nauk. The first qualification is obtained after three or four years of study by submitting and publicly defending a thesis and passing the required examinations. The candidate's thesis can be prepared while following various forms of post-graduate studies. The "Doctor nauk" is the highest scientific degree in Ukraine, comparable to "Habilitation" in some Western countries. It is awarded to candidates already holding a "Kandidat nauk", on the successful presentation and defence of the "Doctor nauk" (habilitation) dissertation. The Habilitation dissertation should represent a major contribution to the development of a given field or branch of learning, and has to be published entirely or at least its main parts.

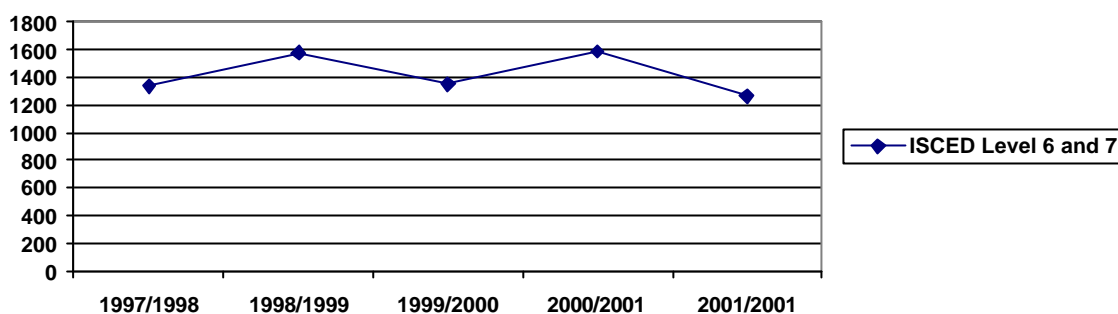
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	2948	1337
98/99	2518	1578
99/00	2789	1351
00/01	2937	1586
01/02	2714	1263

Students entering a Physics degree program over the 1997/2002 period

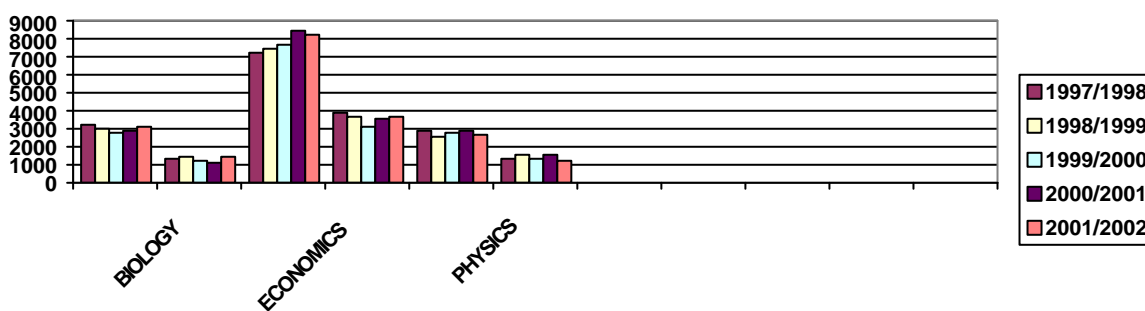


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	3238	1328	7260	3874	2948	1337	188599	77308
98/99	2964	1479	7441	3698	2518	1578	191819	79526
99/00	2831	1267	7739	3142	2789	1351	197865	81387
00/01	2949	1175	8487	3556	2937	1586	191458	82716
01/02	3158	1433	8263	3728	2714	1263	194209	81341



YUGOSLAVIA

Higher education in Serbia includes university education (faculties and art academies) and non-university education (post-secondary schools) where courses last no less than two years and no more than three years. Higher education in Montenegro is only provided at university level. Universities and specialized institutes offer programmes that last between four and six years and lead to a Diploma (Diploma Visokog Obrazovanja or Bachelor). Students who are awarded this degree are also awarded a professional title in various scientific and artistic fields (e.g. mechanical engineer, economist, medical doctor).

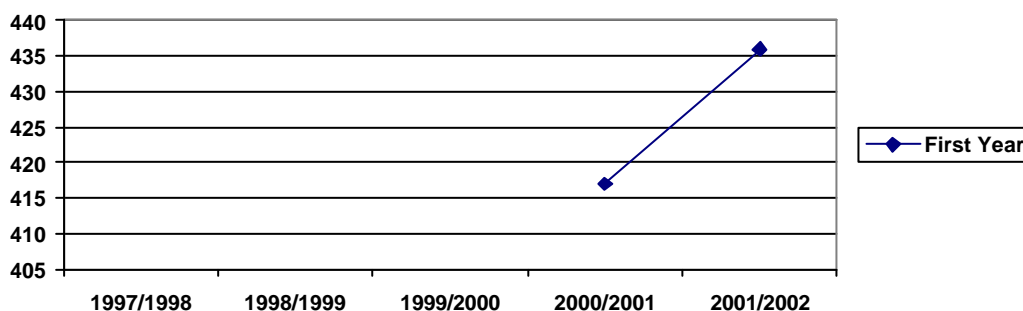
The Master's Degree programme lasts for at least two years. Upon successful completion of the course work and the defence of a thesis, candidates are awarded a Magistar Nauka

The Doctorate of Science or Doktor Nauka is the highest academic degree. It is obtained through independent research and does not require structured course work of any kind. Candidates are evaluated on the basis of published research papers and their ability to write and defend a doctoral dissertation.

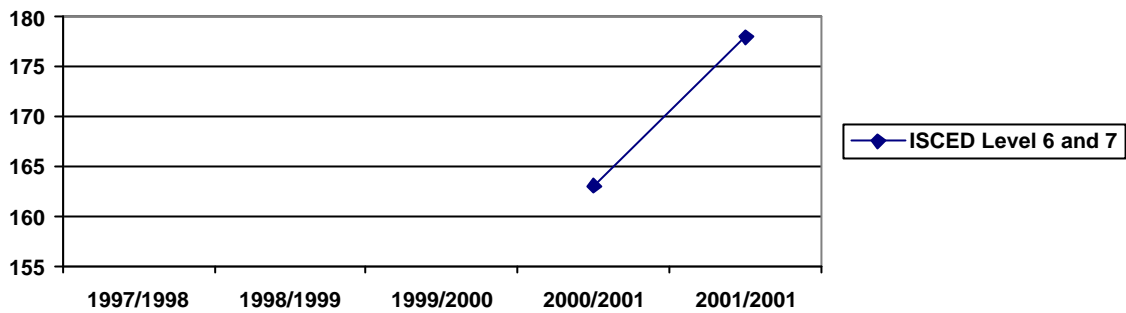
Students entering a Physics degree program and obtaining a physics degree over the 1997/2002 period

Year	First Year	Degree level 6 and 7 ISCED
97/98	X	X
98/99	X	X
99/00	X	X
00/01	417	163
01/02	436	178

Students entering a Physics degree program over the 1997/2002 period

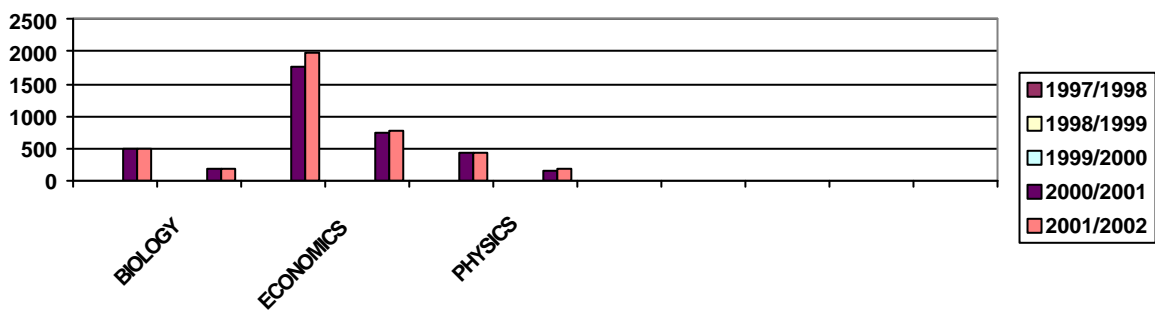


Students obtaining a physics degree over the 1997/2002 period



Number of students entering physics degree courses, obtaining a physics degree compared to other sciences and the overall studying population.

	BIOLOGY		ECONOMICS		PHYSICS		TOTAL	
	entering	graduat.	entering	graduat.	entering	graduat.	entering	graduat.
97/98	X	X	X	X	X	X	X	X
98/99	X	X	X	X	X	X	X	X
99/00	X	X	X	X	X	X	X	X
00/01	508	187	1763	761	417	163	28391	11573
01/02	484	193	1971	779	436	178	31703	12642



Graduates and Post-graduates in Sciences per 1000 of population aged 20-29

	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002
Belgium	9.2	9.4	9.7	9.7	10.1
Denmark	9.6	9.4	8.1	8.2	11.7
Germany	9.1	8.8	8.6	8.2	8
Greece	3.8	3.7	4.1	3.9	4.3
Spain	7.6	8	9.5	9.9	11.3
France	17.5	18.5	19	19.6	19.9
Ireland	21.8	22.4	22.7	23.2	21.7
Italy	5	5.1	5.4	5.7	5.9
Luxembourg	1.2	1.4	1.4	1.8	1.8
Netherlands	5.7	6	5.8	5.8	6.1
Austria	4.3	7.7	6.8	7.1	7.2
Portugal	5.1	5.5	5.8	6.3	6.4
Finland	15.8	15.9	17.8	16	16.7
Sweden	7.8	7.9	9.7	11.6	12.4
United Kingdom	14.4	15.2	15.6	16.2	16.1
Norway	8.4	7.5	7.2	7.9	8.6
Bulgaria	6	5.5	6.5	6.6	7.9
Czech Republic	4.4	4.6	5	5.5	5.6
Estonia	4.2	2.9	5.7	7	7.3
Hungary	5	5	5.1	4.5	3.7
Lithuania	7.3	8.6	10.8	12.1	14.8
Latvia	6.9	5.9	6.3	7.5	7.6
Poland	3.8	4.9	5.7	6.6	7.4
Romania	5.9	4.2	4.1	4.5	4.9
Slovenia	6.3	8	8.4	8.9	8.3
Slovakia	4.9	4.3	5.1	5.3	7.4

Physicists on the European marketplace

Repartition (E.U 1990-2000/%):

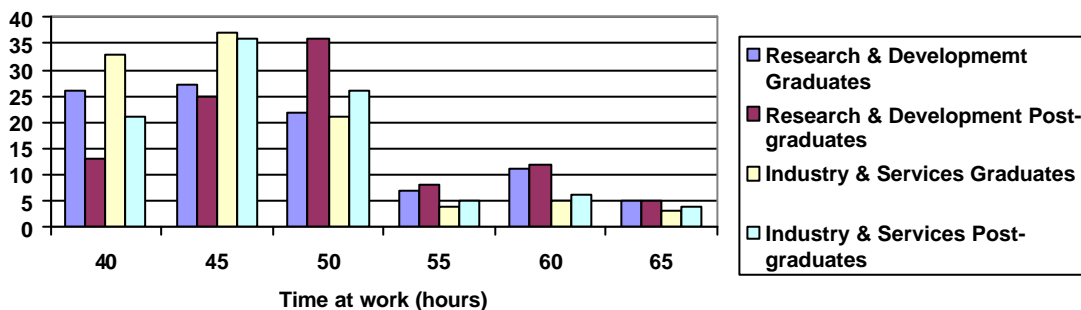
Type of Diploma	Graduates (ISCED6)	Post-Grad. (ISCED 7)
Research and Education	30	40
Industry	57	47
Services	13	13

Fields of occupation:

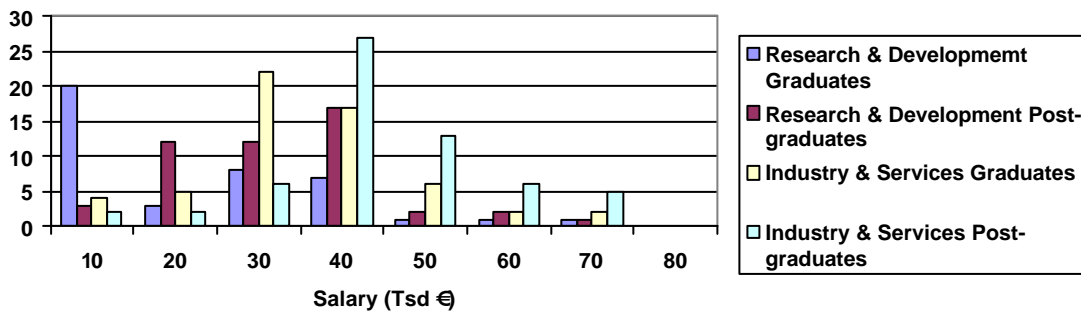
Industry: Automobile, Chemistry, Electronic, Health, Optic, Lasers, Engineer-offices, Precision Mechanics.

Services: Bank, Stock Exchange, Insurance, Consulting, Public Services, Hospitals.

Time at work (E.U 1990-2002 per week/ %)



Average retribution (E.U 1990-2002 /%)



Unemployment (E.U 1985-2002/%)

