

UNIVERSIDADE DO PORTO

**Self-Evaluation Report**

**Annex XIV**

**Scientific papers of the University of Porto indexed  
in the Web of Science  
2004-08**

Institutional Evaluation  
European University Association

**Scientific papers of the University of Porto indexed in  
the Web of Science  
2004-2008**

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## Introduction

### Method

The data shown in this document refers to scientific papers authored by teachers (including guest teachers), researchers (including those with grants), non-academic staff and students of the U.Porto, and the source used is the *Institute for Scientific Information - Web of Science* (ISI – WoS).

For each year of indexation, the search was conducted by address (places with a U.Porto campus: Porto, Gaia, Matosinhos and Vila do Conde), in the databases Science Citation Index Expanded, Social Sciences Citation Index, Arts and Humanities Citation Index, regardless of the year of publication, language and type of document. For the 2008 indexation, search was conducted on 5 January 2009; for 2003 to 2007, it was re-done on 15 January 2009.

For each reference found, we checked its connection to the U.Porto: either explicit or because there are references to Faculties, department(s), service(s) or R&D units of the U.Porto. For the scientific papers affiliated to hospitals, we checked if the author(s) is/are also member(s) of the U.Porto and, in this case, they were accounted for in the respective Faculties.

Scientific papers affiliated in more than one Faculty were accounted for in each respective faculty.

The U.Porto total corresponds to the actual total; it is different from the sum of the Faculties because the scientific papers with double or multiple affiliation were accounted for in the Faculties involved, and because it also includes scientific papers from Research Units for which we were not able to establish the connection of the author to a Faculty.

### Definitions

“**U.Porto with proper affiliation**” means that the references are found with the search query: *address* = (“Univ Porto” or “Univ Oporto”) and *country* = “Portugal”.

“**U.Porto without proper affiliation**” means that the scientific papers are authored by a member of the University, but they are not found with the search query: *address* = (“Univ Porto” or “Univ Oporto”) and *country* = “Portugal”.

The **scientific papers per FTE doctorate ratio** (FTE = full time equivalent) **up to 2007** (inclusive) is obtained by dividing the number of scientific papers indexed in the year by the number of FTE of the categories Full Professor, Associate Professor, Assistant Professor and Researchers, as at 31 December of the previous year. **For 2008**, it is obtained by dividing the number of scientific papers indexed by the number of FTE teachers and researchers with a doctorate degree, as at 31 December 2007.

The **Hirsch index,  $h$** , means that on the date when the search was done, there were  $h$  scientific papers with at least  $h$  citations in the Web of Science. The citations of scientific papers indexed between 2004 and 2007 were accounted for on 15 January 2009; the citations of scientific papers indexed in 2008 were accounted for on 5 January 2009.

Table 1 and chart 1 show the growth between 1999 and 2008 of the national and the U.Porto scientific production.

The scientific production of the U.Porto represents 20% of the national total in the past ten years, with an average growth rate of 14% in the past three years.

Table 1: ISI – WoS scientific papers, growth 1999-2008 – Portugal and U.Porto

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Portugal (1)	3 495	3 592	4 188	4 288	5 492	5 666	6 715	7 738	7 699	9 742
U.Porto total (2)	677	696	796	828	1047	1189	1395	1562	1721	2080
U.Porto contribution (%) (2)/(1)	19.4%	19.4%	19.0%	19.3%	19.1%	21.0%	20.8%	20.2%	22.4%	21.4%
Annual variation Portugal (%)		2.8%	16.6%	2.4%	28.1%	3.2%	18.5%	15.2%	-0.5%	26.5%
Total annual variation U.Porto (%)		2.8%	14.4%	4.0%	26.4%	13.6%	17.3%	12.0%	10.2%	20.9%

Source: ISI – WoS.

Table 2 shows the scientific papers with and without proper affiliation for the U.Porto total and for the years 1999-2008. In these past ten years, 25% of the scientific papers from the U.Porto are not properly affiliated. As such, there are not acknowledged by the searches based on the Country and the University of Porto.

Table 2: ISI – WoS scientific papers, growth 1999-2008 – U.Porto

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
U.Porto with proper affiliation (1)	487	482	576	584	753	897	1 034	1 236	1 304	1 683
U.Porto without proper affiliation (2)	190	214	220	244	294	292	361	326	417	397
U.Porto total (3) = (1) + (2)	677	696	796	828	1 047	1 189	1 395	1 562	1 721	2 080
U.Porto without proper affiliation % (2)/(3)	28.1%	30.7%	27.6%	29.5%	28.1%	24.6%	25.9%	20.9%	24.2%	19.1%

Source: ISI – WoS.

Chart 1: ISI – WoS scientific papers, growth 1999-2008 – Portugal and U.Porto



Table 3 shows the growth between 2004 and 2008 of the number of scientific papers, per Faculty.

Table 3: ISI – WoS scientific papers, growth 2004-2008, per Faculty

	2004	2005	2006	2007	2008
Faculty of Architecture	0	0	1	0	0
Faculty of Fine Arts	0	0	0	0	1
Faculty of Sciences	290	351	407	410	532
Faculty of Nutrition and Food Science	17	22	24	32	36
Faculty of Sport	13	18	24	30	49
Faculty of Law	0	0	0	2	1
Faculty of Economics	27	24	47	32	52
Faculty of Engineering	285	305	323	287	373
Faculty of Pharmacy	121	137	142	190	197
Faculty of Arts	5	3	7	1	9
Faculty of Medicine	271	332	336	479	518
Faculty of Dental Medicine	11	5	6	5	15
Faculty of Psychology and Education Science	8	13	17	25	20
Institute of Biomedical Sciences Abel Salazar	188	220	280	313	359
<b>Total U.Porto</b>	<b>1189</b>	<b>1395</b>	<b>1562</b>	<b>1721</b>	<b>2080</b>

Source: ISI – WoS

Table 4 shows the growth between 2003 and 2007, per Faculty, of the number of FTE PhDs (2003-2006: Full Professors, Associate Professors, Assistant Professors and Researchers; 2007: PhDs), as at 31 December.

Table 4: FTE PhDs (31 Dec), growth 2003-2007, per Faculty

	2003	2004	2005	2006	2007
Faculty of Architecture	30.5	25.0	30.0	33.0	21.0
Faculty of Fine Arts	25.0	25.0	23.0	23.0	12.0
Faculty of Sciences	238.2	243.3	245.3	244.4	253.0
Faculty of Nutrition and Food Science	7.5	8.8	9.3	9.3	12.6
Faculty of Sport	40.6	40.6	47.1	47.6	49.0
Faculty of Law	7.4	9.0	9.0	11.0	11.5
Faculty of Economics	77.2	84.2	92.2	101.2	98.7
Faculty of Engineering	327.8	335.8	347.8	353.0	354.2
Faculty of Pharmacy	51.0	50.0	54.0	53.0	64.4
Faculty of Arts	116.6	122.0	127.0	133.8	142.3
Faculty of Medicine	127.4	128.1	130.6	129.7	132.6
Faculty of Dental Medicine	33.0	32.5	34.5	37.0	35.6
Faculty of Psychology and Education Science	52.1	53.0	53.0	61.0	66.0
Institute of Biomedical Sciences Abel Salazar	123.8	98.8	98.4	115.6	92.2
<b>U.Porto total</b>	<b>1 272.1</b>	<b>1 277.1</b>	<b>1 307.2</b>	<b>1 357.6</b>	<b>1 355.1</b>

Source: GRH.

Table 5 (chart 2) shows the growth of the ratio scientific paper/FTE PhDs between 2004 and 2008, as at 31 December of the previous year.

Table 5: Ratio scientific paper/FTE PhD (31 Dec of the previous year), growth 2004-2008, per Faculty

	2004	2005	2006	2007	2008
Faculty of Architecture	0.0	0.0	0.03	0.0	0.0
Faculty of Fine Arts	0.0	0.0	0.0	0.0	0.1
Faculty of Sciences	1.2	1.4	1.7	1.7	2.1
Faculty of Nutrition and Food Science	2.3	2.5	2.6	3.4	2.9
Faculty of Sport	0.3	0.4	0.5	0.6	1.0
Faculty of Law	0.0	0.0	0.0	0.2	0.1
Faculty of Economics	0.3	0.3	0.5	0.3	0.5
Faculty of Engineering	0.9	0.9	0.9	0.8	1.1
Faculty of Pharmacy	2.4	2.7	2.6	3.6	3.1
Faculty of Arts	0.4	0.02	0.1	0.01	0.1
Faculty of Medicine	2.1	2.6	2.6	3.7	3.9
Faculty of Dental Medicine	0.3	0.2	0.2	0.1	0.4
Faculty of Psychology and Education Science	0.2	0.2	0.3	0.4	0.3
Institute of Biomedical Sciences Abel Salazar	1.5	2.2	2.8	2.7	3.9
<b>U.Porto total</b>	<b>0.9</b>	<b>1.1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.5</b>

Sources: ISI – WoS and GRH.

Chart 2: Ratio scientific paper/FTE PhD (31 Dec of the previous year), growth 2004-2008, per Faculty

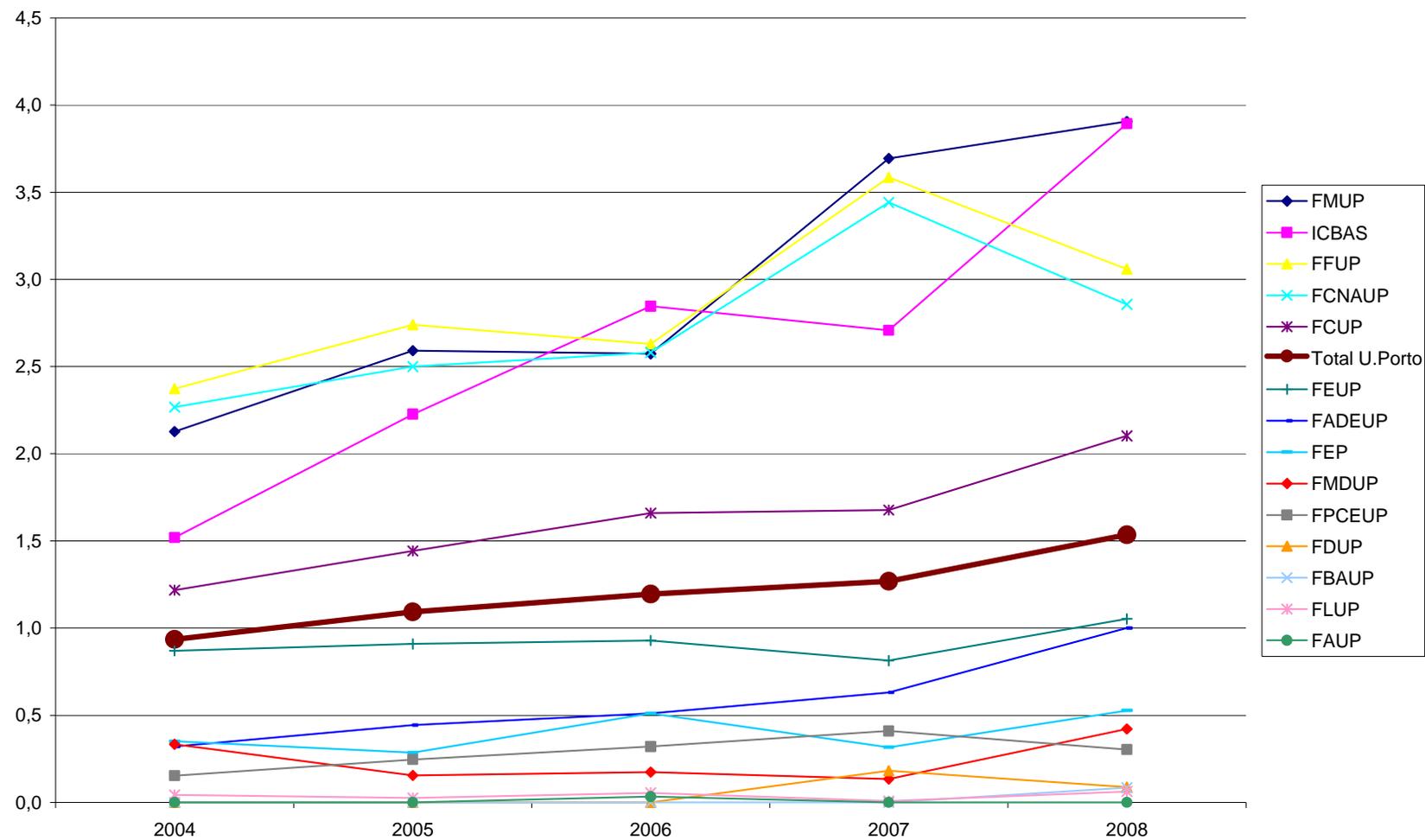


Table 6 shows the number of scientific papers indexed in 2008, per Faculty, mentioning those that are not properly affiliated and their percentage in the Faculty's total.

Note that the  $h$  Index = 10, in other words, of the 2 080 scientific papers from the U.Porto indexed in 2008, ten had already at least 10 citations on 5 January 2009.

Table 6: ISI – WoS scientific papers, indexed in 2008, per Faculty

	Scientific papers	Without proper affiliation	
	(1)	(2)	(2)/(1)
Faculty of Architecture			
Faculty of Fine Arts	1		
Faculty of Sciences	532	31	6%
Faculty of Nutrition and Food Science	36	1	3%
Faculty of Sport	49	2	4%
Faculty of Law	1		
Faculty of Economics	52	6	12%
Faculty of Engineering	373	21	6%
Faculty of Pharmacy	197	5	3%
Faculty of Arts	9		
Faculty of Medicine	518	167	32%
Faculty of Dental Medicine	15	1	7%
Faculty of Psychology and Education Science	20	3	15%
Institute of Biomedical Sciences Abel Salazar	359	109	30%
<b>U.Porto total</b>	<b>2 080</b>	<b>397</b>	<b>19%</b>

Source: ISI – WoS.

Table 7 compares the number of scientific papers and citations of Portugal and the University of Porto, between 2004 and 2007.

Table 7: ISI – WoS scientific papers and citations, 2004-2007, comparative analysis Portugal and U.Porto

	2004		2005		2006		2007	
	Portugal	U.Porto	Portugal	U.Porto	Portugal	U.Porto	Portugal	U.Porto
Scientific papers	5 666	1 189	6 715	1 395	7 738	1 562	7 699	1 721
Citations (15 Jan 2009)	46 829	10 738	41 605	8 585	32 506	6 813	16 218	4 201
Citations per scientific paper	8.26	9.03	6.20	6.15	4.20	4.36	2.11	2.44
$h$ Index	65	40	55	31	50	28	30	20
Scientific papers cited (15 Jan 2009)	910	--	1 027	--	1 052	--	930	--
Scientific papers cited (%)	77%	--	74%	--	67%	--	54%	--

Source: ISI – WoS.

Tables 8 to 11 show the number of scientific papers indexed, between 2007 and 2004 respectively, per Faculty, and citations received up to 15 January 2009, mentioning those that are not properly affiliated.

Table 8: ISI – WoS scientific papers, indexed in 2007, per Faculty

	Scientific papers	Citations	Citations per scientific paper	Without proper affiliation			
				Scientific papers	%	Citations	%
				(3)	(3)/(1)	(4)	(4)/(2)
(1)	(2)	(2)/(1)	(3)	(3)/(1)	(4)	(4)/(2)	
Faculty of Architecture							
Faculty of Fine Arts							
Faculty of Sciences	410	1 411	3.4	32	8%	58	4%
Faculty of Nutrition and Food Science	32	46	1.4	1	3%		
Faculty of Sport	30	71	2.4				
Faculty of Law	2						
Faculty of Economics	32	17	0.5	2	6%	1	6%
Faculty of Engineering	287	518	1.8	12	4%	13	3%
Faculty of Pharmacy	190	436	2.3	14	7%	5	1%
Faculty of Arts	1			1	100%		
Faculty of Medicine	479	947	2.0	229	48%	180	19%
Faculty of Dental Medicine	5	9	1.8				
Faculty of Psychology and Education Science	25	13	0.5	1	4%		
Institute of Biomedical Sciences Abel Salazar	313	688	2.2	114	36%	192	28%
<b>U.Porto total</b>	<b>1 721</b>	<b>4 201</b>	<b>2.44</b>	<b>417</b>	<b>24%</b>	<b>451</b>	<b>11%</b>

Source: ISI – WoS.

Table 9: ISI – WoS scientific papers, indexed in 2006, per Faculty

	Scientific papers	Citations	Citations per scientific paper	Without proper affiliation			
				Scientific papers	%	Citations	%
				(3)	(3)/(1)	(4)	(4)/(2)
(1)	(2)	(2)/(1)	(3)	(3)/(1)	(4)	(4)/(2)	
Faculty of Architecture	1						
Faculty of Fine Arts							
Faculty of Sciences	407	1 896	4.7	38	9%	111	6%
Faculty of Nutrition and Food Science	24	84	3.5	2	8%	2	2%
Faculty of Sport	24	71	3.0	2	8%		0%
Faculty of Law							
Faculty of Economics	47	52	1.1	3	6%	4	8%
Faculty of Engineering	323	1 063	3.3	24	7%	35	3%
Faculty of Pharmacy	142	768	5.4	10	7%	24	3%
Faculty of Arts	7	1	0.1				
Faculty of Medicine	336	1 263	3.8	129	38%	192	15%
Faculty of Dental Medicine	6	11	1.8				0%
Faculty of Psychology and Education Science	17	8	0.5	1	6%	0	0%
Institute of Biomedical Sciences Abel Salazar	280	971	3.5	96	34%	263	27%
<b>Total U.Porto total</b>	<b>1 562</b>	<b>6 813</b>	<b>4.36</b>	<b>326</b>	<b>21%</b>	<b>910</b>	<b>13%</b>

Source: ISI – WoS.

Table 10: ISI – WoS scientific papers, indexed in 2005, per Faculty

	Scientific papers	Citations	Citations per scientific paper	Without proper affiliation			
				Scientific papers	%	Citations	%
				(1)	(2)	(2)/(1)	(3)
Faculty of Architecture							
Faculty of Fine Arts							
Faculty of Sciences	351	1 956	5.6	39	11%	219	11%
Faculty of Nutrition and Food Science	22	307	14.0				0%
Faculty of Sport	18	105	5.8	1	6%	7	7%
Faculty of Law							
Faculty of Economics	24	100	4.2	3	13%	8	8%
Faculty of Engineering	305	1 583	5.2	24	8%	111	7%
Faculty of Pharmacy	137	943	6.9	10	7%	32	3%
Faculty of Arts	3	18	6.0				0%
Faculty of Medicine	332	1 362	4.1	183	55%	335	25%
Faculty of Dental Medicine	5	8	1.6				0%
Faculty of Psychology and Education Science	13	13	1.0	1			0%
Institute of Biomedical Sciences Abel Salazar	220	1621	7.4	81	37%	855	53%
<b>U.Porto total</b>	<b>1 395</b>	<b>8 585</b>	<b>6.15</b>	<b>361</b>	<b>26%</b>	<b>1 785</b>	<b>21%</b>

Source: ISI – WoS.

Table 11: ISI – WoS scientific papers, indexed in 2004, per Faculty

	Scientific papers	Citations	Citations per scientific paper	Without proper affiliation			
				Scientific papers	%	Citations	%
				(1)	(2)	(2)/(1)	(3)
Faculty of Architecture							
Faculty of Fine Arts							
Faculty of Sciences	290	2 444	8.4	23	8%	183	7%
Faculty of Nutrition and Food Science	17	180	10.6				
Faculty of Sport	13	92	7.1				
Faculty of Law							
Faculty of Economics	27	125	4.6	5	19%	31	25%
Faculty of Engineering	285	1 671	5.9	28	10%	95	6%
Faculty of Pharmacy	121	1 187	9.8	12	10%	86	7%
Faculty of Arts	5	4	0.8				
Faculty of Medicine	271	2 323	8.6	151	56%	891	38%
Faculty of Dental Medicine	11	53	4.8	2	18%	4	8%
Faculty of Psychology and Education Science	8	33	4.1	1	13%	0	0%
Institute of Biomedical Sciences Abel Salazar	188	1 910	10.2	57	30%	382	20%
<b>U.Porto total</b>	<b>1 189</b>	<b>1 0738</b>	<b>9.03</b>	<b>292</b>	<b>25%</b>	<b>1 799</b>	<b>17%</b>

Source: ISI – WoS.

Table 12 shows the U.Porto total per type of document indexed in the WoS between 2004 and 2008: 66% are *articles*.

Table 12: ISI – WoS scientific papers, growth 2004-2008, per type of document

		2004	2005	2006	2007	2008	U.Porto total
Type of document	Article	766	937	1 047	1 090	1 427	5 267
	Biographical-Item			2			2
	Bibliography	1					1
	Book Review		1		1	4	6
	Correction	1	3	4	2	6	16
	Editorial Material	13	12	16	27	32	100
	Letter	17	30	22	29	44	142
	Meeting Abstract	154	229	226	410	371	1 390
	News Item				1		1
	Proceedings Paper	213	151	201	114	113	792
	Reprint	1					1
	Review	23	32	44	47	83	229
	<b>U.Porto total</b>	<b>1 189</b>	<b>1 395</b>	<b>1 562</b>	<b>1 721</b>	<b>2 080</b>	<b>7 947</b>

Source: ISI - WoS.

Table 13 relates the year of indexation in the WoS with the year of publication. Of the U.Porto total indexed between 2004 and 2008, in 13% of the scientific papers the year of indexation does not tally with the year of publication.

Table 13: Matrix of the relation between the year of indexation in the WoS and the year of publication (U.Porto total)

		Year of indexation					
		2004	2005	2006	2007	2008	U.Porto total
Year of publication	2000	1					1
	2001						
	2002	16					16
	2003	107	19				126
	2004	1 054	166	1			1 221
	2005	11	1 192	143	28		1 374
	2006		18	1 397	219	1	1 635
	2007			21	1 459	282	1 762
	2008				15	1 777	1 792
	2009					20	20
	<b>Total U.Porto</b>	<b>1 189</b>	<b>1 395</b>	<b>1 562</b>	<b>1 721</b>	<b>2 080</b>	<b>7 947</b>

Source: ISI - WoS.

## Sources

GRH: Human Resource Management Interface

ISI – WoS: Web of Science of the Institute for Scientific Information / The Thomson Corporation