

Transformation of Doctoral Training in Poland

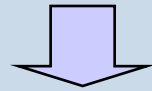
Andrzej Krasniewski

**Conference of Rectors of Academic Schools in Poland
&
Faculty of Electronics and Information Technology
Warsaw University of Technology**



Transformation of doctoral training

unstructured training

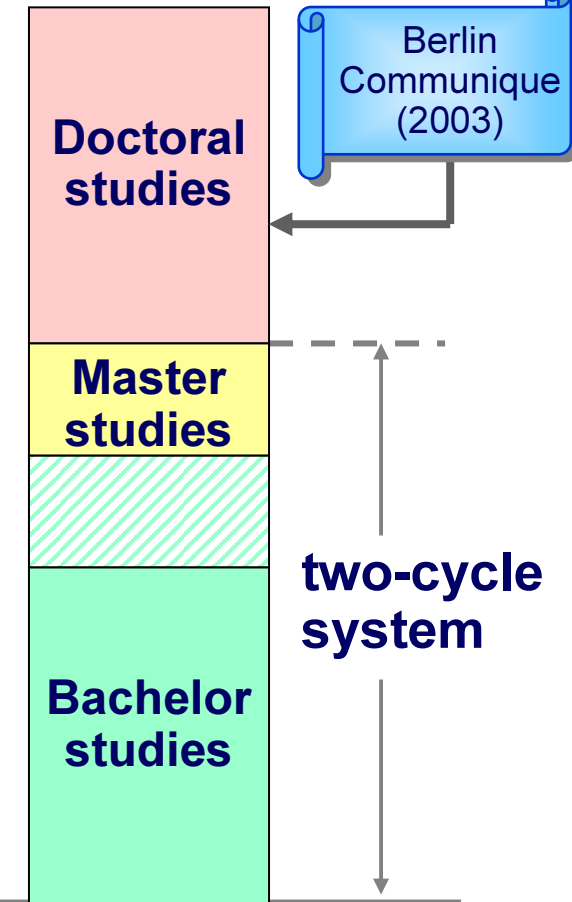


structured training

***Communication of CESAER and SEFI
on the Bologna Declaration
(Helsinki, Feb. 2003)***

***strong support for the idea of the EHEA,
but
„... the doctoral level as such should not
be brought into the Bologna process.”***

Bologna Process



Transformation of doctoral training



Bergen
Communique
(2005)

structured doctoral programmes as a means to increase the numbers of doctoral candidates taking up research careers within the EHEA

- core component - advancement of knowledge through original research
- doctoral qualifications - aligned with the Bologna QF (outcomes-based approach)
- transparent supervision and assessment
- normal workload: 3-4 years full time
- interdisciplinary training
- development of transferable skills
- participants considered as both students and early stage researchers
- no overregulation

OUTLINE

- ❑ **Doctoral training in Poland**
- ❑ **New PhD programme at the Faculty of Electronics & Information Technology**
 - characteristics (with emphasis on curriculum)
 - experiences
- ❑ **Conclusion**

Two paths to doctoral degree

Doctoral degrees awarded by eligible:

- HEIs - individual faculties
- research institutes of Polish Academy of Sciences and 'branch' R&D institutes

☐ unstructured training

take position of a teaching or research assistant at a university or research institute

- *routine teaching and administrative duties*
- *supervised research work*

dominating
until early
1990's

☐ structured training

pursue a PhD programme offered by a university (faculty) or research institute

- *coursework*
- *supervised research work*
- *limited teaching duties*

Doctoral studies vs. doctoral degree

Act on Scientific Title and Degrees (2003)

PhD thesis ... should present an original solution to a scientific problem and demonstrate candidate's deep knowledge of the discipline and his/her ability to carry out research.

procedure leading to a doctoral degree

- ❑ initiation of PhD track (>50% of work done)
 - thesis title
 - supervisor
- ❑ submission of thesis approved by the supervisor
- ❑ thesis review (two reviewers)
- ❑ 'internal' examinations
 - in 'basic' field (e.g. *computer engineering*)
 - in any other field, unrelated to the thesis topic (e.g. *philosophy* for engineers)
 - in foreign language
- ❑ public defence of thesis
- ❑ decision by Faculty Council (Council of the Institute)

Doctoral studies vs. doctoral degree

 **formally unrelated to doctoral studies**

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Doctoral studies - rapid growth after 1990

GROWING DEMAND

- ❑ social and economic changes
 - *recognition of the impact of PhD on well-being and position in society*
 - *unattractive job offers for graduates from MSc programmes (in some areas)*

Act on Higher Education (1990)

GROWING SUPPLY

- ❑ higher admission limits to non-paid studies

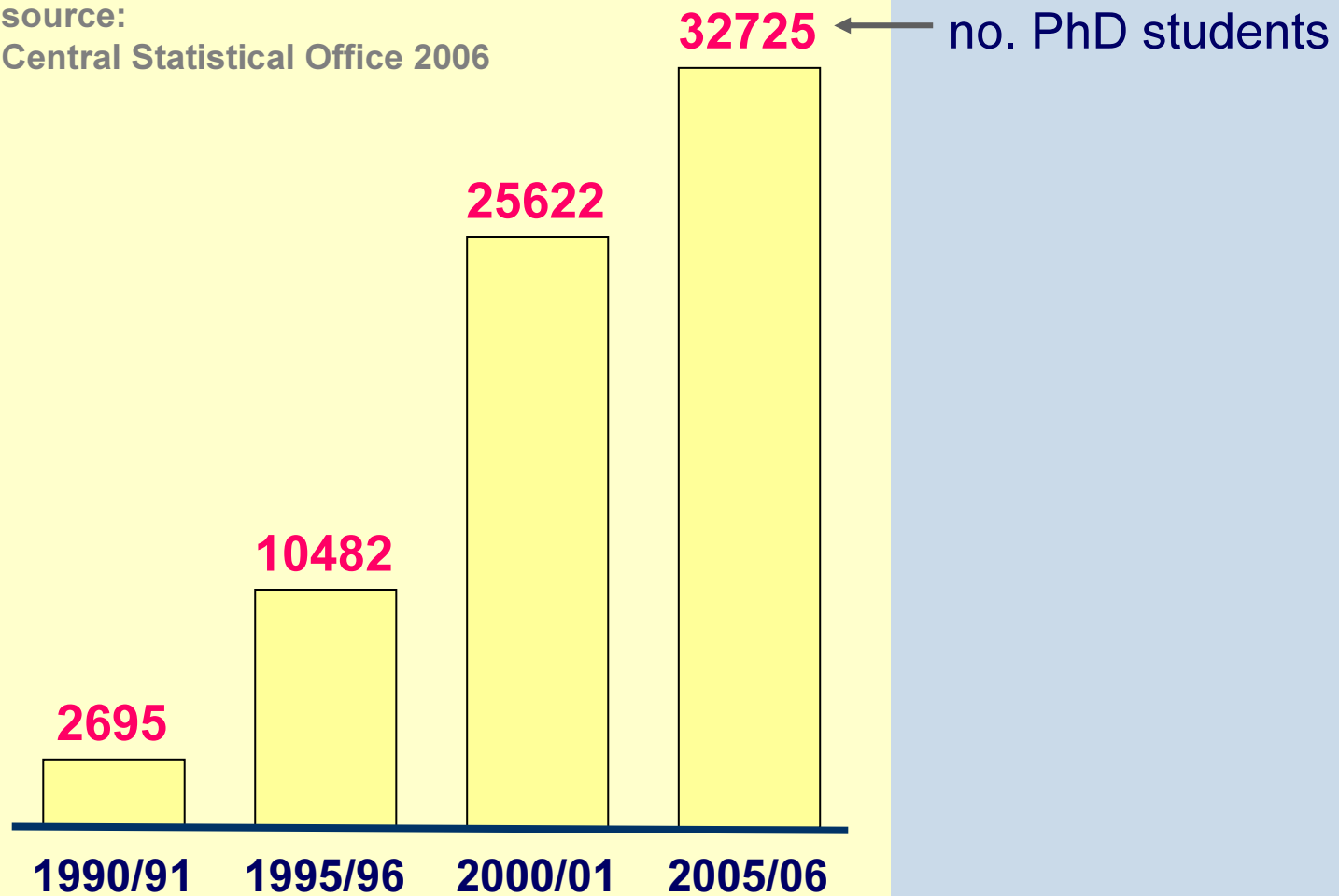
*new rules for financing HEIs:
no. PhD students strongly affects
the allocation of public funds*

- ❑ paid studies

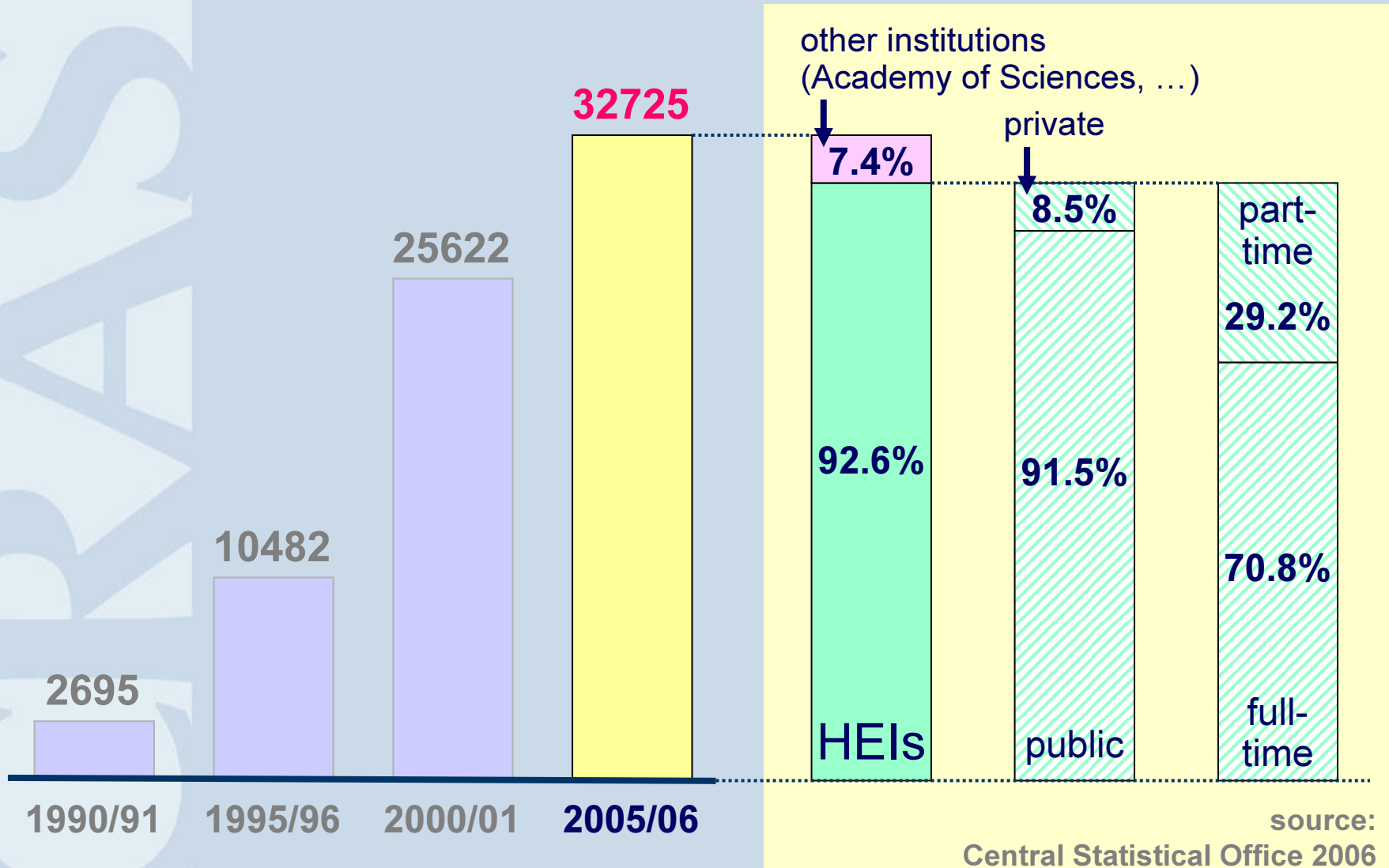
Doctoral studies - rapid growth after 1990

source:

Central Statistical Office 2006



PhD students



PhD studies - current state

Diversity within and between HEIs

but

Common problems and challenges

Problems and challenges (1)

Traditional separation of MSc and PhD programmes

until 2005: Doctoral studies regulated by the Act on Scientific Title and Degrees (not by the Act on Higher Education)

→ *Doctoral studies supervised by vice-rector/vice-dean responsible for research (not for education)*

- **special course offer for PhD**

low number of courses – for economic reasons

→ **low flexibility and attractiveness of the curriculum**

- **PhD research frequently unrelated to work done at Master's level**

→ **long time to degree**

*Law on Higher Education (2005):
doctoral studies (third-cycle studies) – part of higher education system*

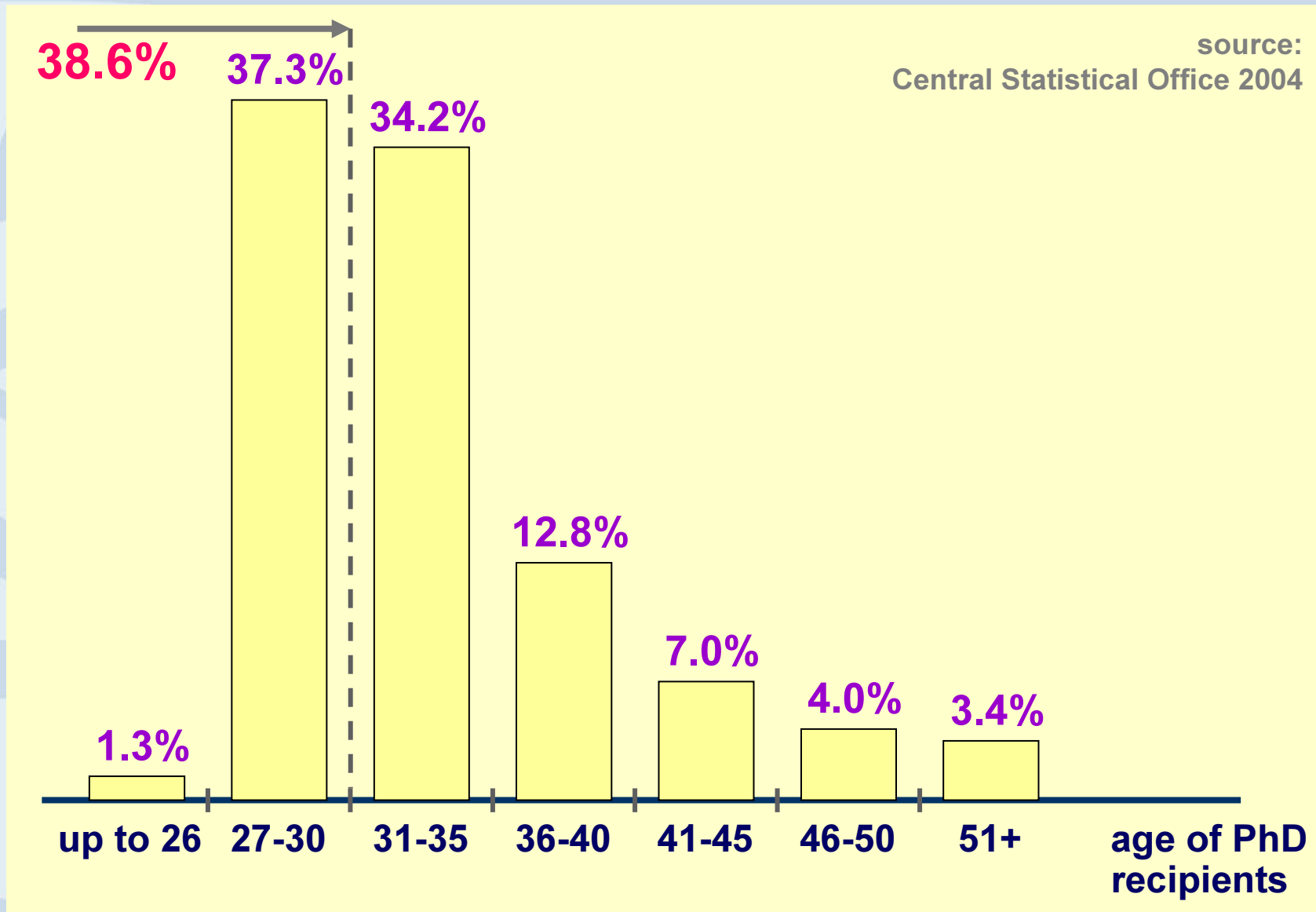
Problems and challenges (2)

Unattractive financial status of students

- *only 40% of doctoral students receive scholarships (from university or faculty budget)*
- *scholarships are low (200-350 euro/months)*
- *new forms of financial aid (from university or faculty budget) available since 2006 – insufficient*
- *limited opportunities for extra support from research grants*

- **little attractiveness of PhD studies for potentially best candidates**
- **part-time or full-time employment outside university**
 - **large number of dismissals**
slow progress in research (long time to degree)

Age of PhD recipients



Problems and challenges (3)

Mismatch of training goals with needs of labour market

- *ca. 5500 PhD degrees awarded each year*
- *limited opportunities for hiring at HEIs (saturation or decrease in the number of students predicted)*
 - ➔ *professional careers outside of academia*

At most HEIs, no serious attempts to adapt

- ➔ *doctoral training still, in principle, oriented towards future university employees*

OUTLINE

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Warsaw University of Technology

- 31000 students
- 19 faculties

Faculty of Electronics and Information Technology

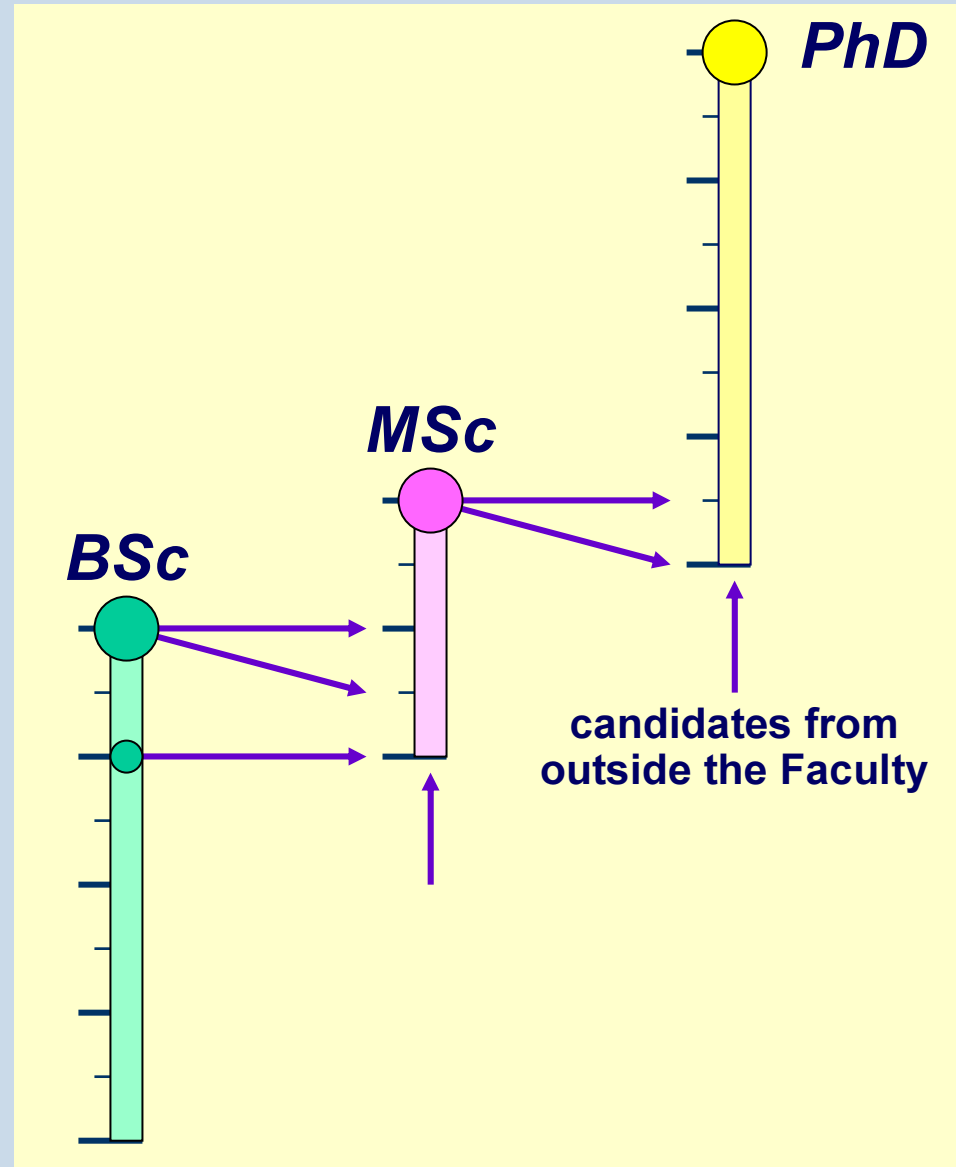
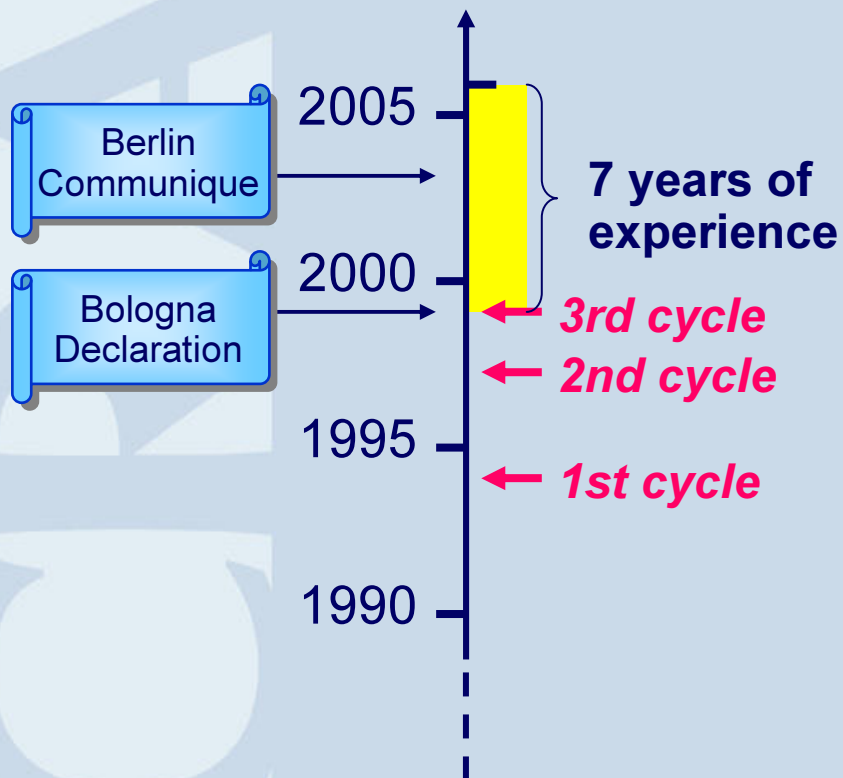
- 3600 first- and second-cycle students
- 270 full-time academic staff



Study system at the Faculty

PhD programme

part of three-cycle study system



Wydział Elektroniki i Technik Informatycznych - Microsoft Internet Explorer

Adres: <http://www.old.elka.pw.edu.pl/>

Politechnika Warszawska

Wydział Elektroniki i Technik Informatycznych

English version 

Witamy

Kierownictwo Wydziału

Rada Wydziału

Instytuty

Aktualności

Kandydaci na studia

Studia

Praktyki i praktykanci

Badania naukowe

Pracownicy

Studenci

Absolwenci

Sieć komputerowa

Używamy ISO-8859-2

DZIENNE STUDIA TRZECIEGO STOPNIA

I. [WPROWADZENIE](#)
II. [PODSTAWOWE USTALENIA](#)
III. [WYMAGANIA PROGRAMOWE](#)
IV. [ZASADY STUDIOWANIA](#)
V. [ZASADY I TRYB PRZYJMOWANIA NA STUDIA III STOPNIA](#)
VI. [UWAGI KOŃCOWE](#)
VII. ZAŁĄCZNIKI

[załącznik 1](#) : Ustalenia kompetencyjne
[załącznik 2](#) : Przedmioty zaawansowane dla studiów II i III stopnia
[załącznik 3](#) : Zadania opiekuna naukowego doktoranta
[załącznik 4](#) : Obowiązki kandydata przyjętego na studia III stopnia oraz studenta studiów III stopnia
[załącznik 5](#) : Podanie o przyjęcie na studia doktoranckie (studia III stopnia)
[załącznik 6](#) : Karta informacyjna kandydata
[załącznik 7](#) : Kwestionariusz osobowy
[załącznik 8](#) : Wniosek o przyznanie stypendium doktoranckiego
[załącznik 9](#) : Karta transferu osiągnięć absolwenta studiów magisterskich
[załącznik 10](#) : Pracownia Naukowa: karta informacyjna
[załącznik 11](#) : Pracownia Naukowa: karta oceny

[RADA DOKTORANTÓW WYDZIAŁU ELEKTRONIKI I TECHNIK INFORMATYCZNYCH](#)

Sekretariat Studiów III Stopnia:
p. Małgorzata Wierzbicka

Kierownik Studiów Doktoranckich
prof. nzw. dr hab. Andrzej Krasniewski

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third-cycle
studies

- Introduction
- General regulations
- Curriculum requirements
- Academic regulations
- Admissions

Appendices

Duration of PhD programme

likely to change in near future

regulations by State law

- ❑ duration: max. 4 years
- ❑ in individual cases - extension by one more year possible
- ❑ requirements to complete the programme – not defined

regulations at Warsaw University of Technology

- ❑ duration: 4 years (extension to 5 years possible)
- ❑ requirements to complete the programme
 - fulfilment of course requirements
 - submission of thesis approved by the supervisor

if not satisfied within 4 (5) years



dismissal

opportunity to continue research on less formal basis

Curriculum requirements

- ❑ core component - original research
- ❑ flexibility (in designing individual study programme)

	ECTS points	} < 25%
non-engineering courses	6	
courses in engineering	8	
advanced math and science courses	12	
advanced specialization-oriented courses	12	
advanced courses (free electives)	18	}
PhD seminar (7 semesters)	14	
PhD research (7 semesters)	140	
editing PhD thesis	30	
total	240	

PhD research

- ❑ **starts in the 1st semester**
- ❑ **outcomes documented each semester with a report**
- ❑ **special requirements on publishing**

Coursework requirements

☐ advanced math & science and engineering courses

- courses offered at the Faculty
- courses offered by other HEIs (in Poland or abroad)
- summer schools etc.

at least two courses taught in English

☐ courses intended to develop transferable skills


- non-engineering courses intended for all students (in business, management, law, ...)
- special courses for PhD students, e.g.
 - *Communication techniques for a researcher*
 - *Ethics in engineering research*

Konwersatorium Politechniki Warszawskiej - Wykłady specjalne - Microsoft Internet Explorer

Plik Edycja Widok Ulubione Narzędzia Pomoc

Wstecz Wyszukaj Ulubione Multimedia

Adres http://www.konwersatorium.pw.edu.pl/konwersatorium/w_specjalne.html Przejść Łączy

 **KONWERSATORIUM**
POLITECHNIKI WARSZAWSKIEJ

UCZELNIANA
OFERTA
DYDAKTYCZNA

Cele | Odczyty | Wykłady specjalne | Wykłady zalecane | Seminaria | Spotkania | Wydarzenia

WYKŁADY SPECJALNE

Semestr letni 2006

SL1: Rola nauki i techniki w rozwoju cywilizacji i kultury europejskiej (15 godzin) [LISTA](#) [ZAPISY](#)
prof. Włodzimierz Zych (Politechnika Warszawska)
wtorki, godz. 16 - 18, sala 219 (GG) - pierwszy wykład 28 lutego

SL2: Techniki komunikowania się w działalności naukowca (15 godzin) [LISTA](#) [ZAPISY](#)
prof. Andrzej Kraśniewski (Politechnika Warszawska), mgr inż. Wojciech Murzyn (Siemens)
wtorki, godz. 18:15 - 20, sala 161, Gmach Elektroniki (Nowowiejska 15/19) - pierwszy wykład 7 marca

Semestr zimowy 2005/

SZ1: Źródła i przetwarzanie energii w XXI wieku (15 godzin)
Prof. Roman Domański (PW)
wtorki, godz. 16:15 - 18, sala 105, Gmach ITC, Nowowiejska 21/25
[Przykładowy wykład \(PDF\)](#)

SZ2: Złożoność algorytmów, granice obliczalności (15 godzin) [LISTA](#) [ZAPISY](#)

Warsaw University of Technology

**Communication techniques
for a researcher**

WARSAW UNIVERSITY OF TECHNOLOGY
course offer for PhD students
- special courses

0604+... Konwersatoriu... 15:33

Communication techniques for a researcher

instructors: A. Krasniewski (WUT), W. Murzyn (Siemens)

contents:

- writing technical papers
 - incl. legal and ethical aspects of publishing
- designing visuals and delivering technical presentations
- special topics
 - Publishing on www
 - How to write a PhD thesis?
 - How to review scientific publications?

Integration with MSc programme

uncommon in Poland !!!

- ❑ **common course offer for both MSc and PhD students**

 - > 80 advanced courses

 - (in math & science and electronics & computer engineering)

 - solution to 'unsolvable' problem of providing PhD students with rich course offer*

- ❑ **partial credit transfer MSc → PhD**

- ❑ **administrative procedures** (registration for courses, ...)
 - same as for the second-cycle studies

	ECTS points	max transfer from 2nd cycle
non-engineering courses	6	4
courses in engineering	8	8
advanced math and science courses	12	6
advanced specialization-oriented courses	12	6
advanced courses (free electives)	18	6
PhD seminar (7 semesters)	14	
PhD research (7 semesters)	140	
editing PhD thesis	30	
total	240	30

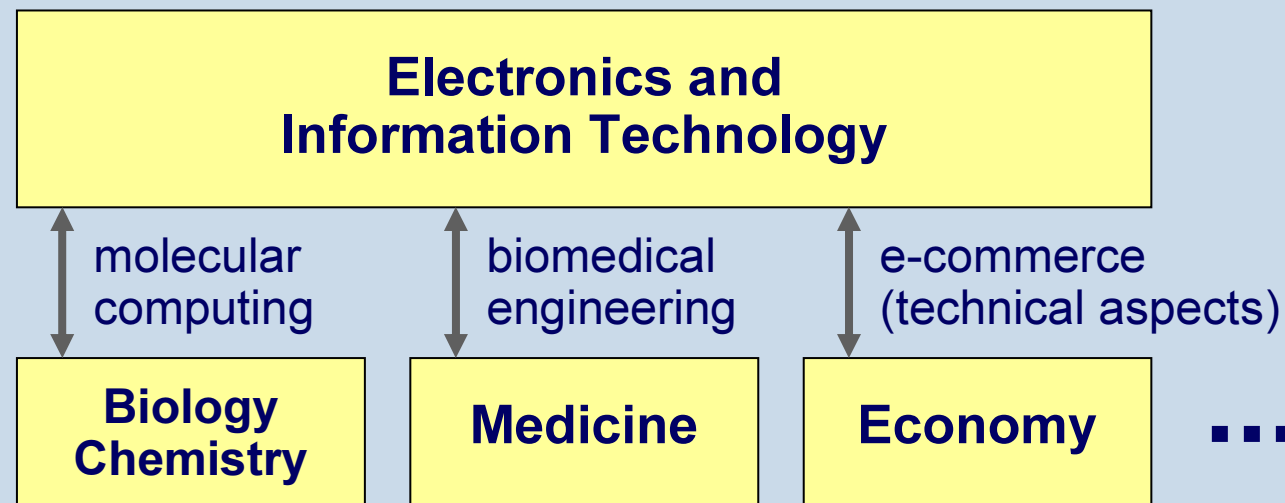
equivalent to one semester

Support for interdisciplinary training

*uncommon
in Poland !!!*

- ❑ PhD programme open to candidates with non-engineering background
- ❑ flexibility of curriculum requirements (courses can be taken at other engineering and non-engineering HEIs)

Research (PhD theses) outside traditional disciplines represented at the Faculty



Joint development of a programme

Warsaw University of Technology

- Faculty of Electronics and Information Technology
- Faculty of Mechatronics
- Faculty of Physics



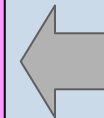
Inter-University Programme in Optoelectronics, Fotonics and Nanotechnology



Warsaw University

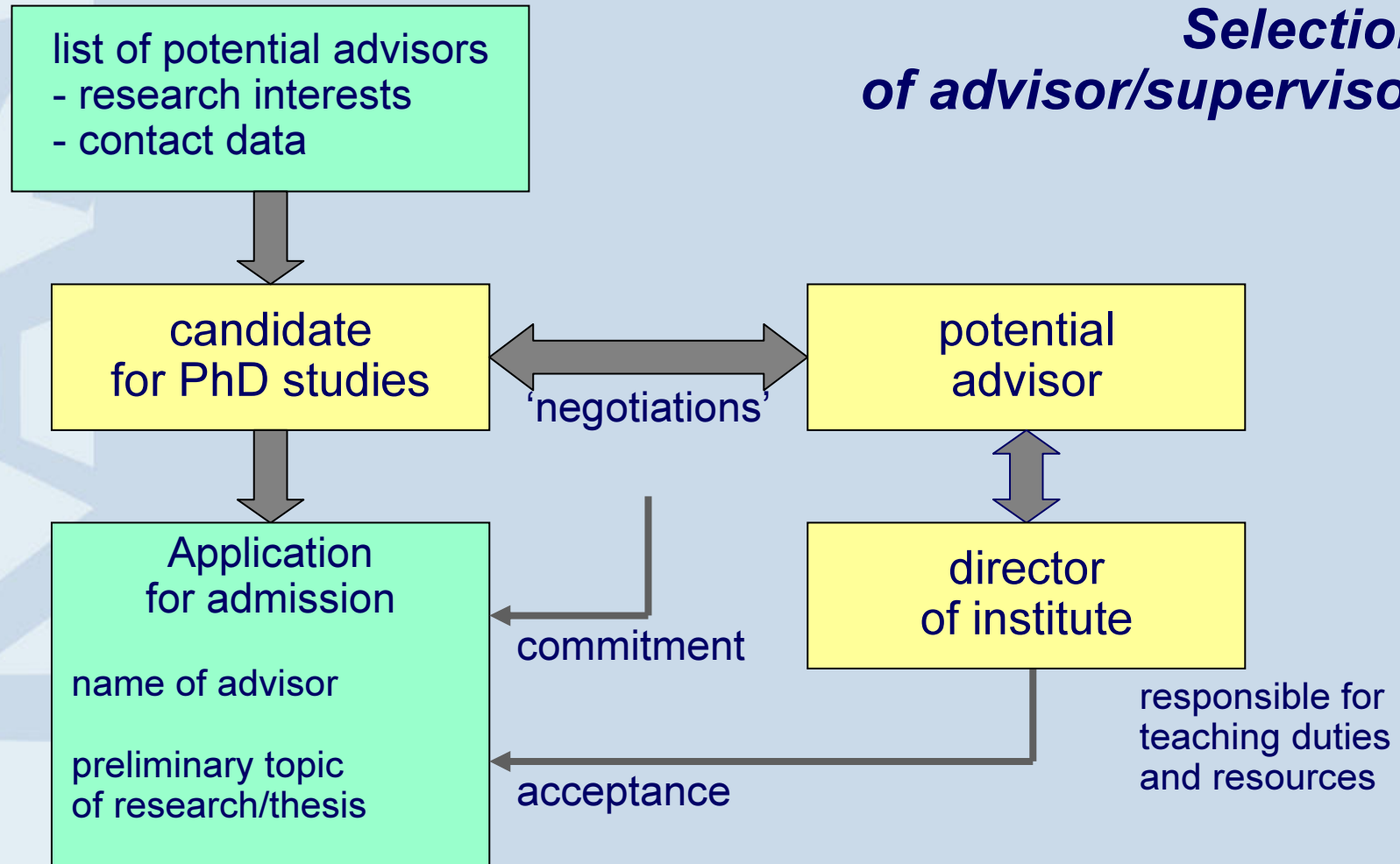
- Faculty of Mathematics, Informatics and Mechanics
- Faculty of Physics

Military University of Technology



Supervision

Selection of advisor/supervisor



Supervision

Areas of responsibility and decision making

- Rector
- Faculty Council
- Dean
- Director of PhD Programme
- Director of Institute
- student's advisor

Duties of student's advisor

The screenshot displays the website of the Faculty of Electronics and Information Technology (Wydział Elektroniki i Technik Informatycznych) at the University of Warsaw (Politechnika Warszawska). The page is viewed in Microsoft Internet Explorer. The sidebar on the left contains navigation links: English version, Witamy, Kierownictwo Wydziału, Rada Wydziału, Instytuty, Aktualności, Kandydaci na studia, Studia, Praktyki i praktykanci, Badania naukowe, Pracownicy, and Studenci. The main content area is divided into two sections. The top section, titled 'załącznik 1' and 'USTALENIA KOMPETENCYJNE', lists the competencies and obligations of various entities. The bottom section, titled 'załącznik 3' and 'ZADANIA OPIEKUNA NAUKOWEGO DOKTORANTA', lists the duties of a doctoral supervisor.

USTALENIA KOMPETENCYJNE

Poniżej zestawiono kompetencje oraz obowiązki poszczególnych podmiotów mających wpływ na sposób organizacji i prowadzenia studiów III stopnia na Wydziale.

Rector

- decyzja w sprawie zmiany organizacji studiów (przekształcenia dotychczas prowadzonych studiów oraz powołania nowych studiów) - na wniosek Dziekana zatwierdzony przez Radę Wydziału,
- zatwierdzanie programu studiów ustalonego przez Radę Wydziału,
- zatwierdzanie regulaminu studiów ustalonego przez Radę Wydziału,
- powoływanie i odwoływanie kierownika studiów doktoranckich - na wniosek Dziekana,

ZADANIA OPIEKUNA NAUKOWEGO DOKTORANTA

a) przed złożeniem przez kandydata dokumentów

1. przygotować - wspólnie z kandydatem wniosek o transfer jednostek dydaktycznych, tzn. wypełnić " [Kartę transferu osiągnięć absolwenta studiów magisterskich](#) " (dotyczy kandydatów nie będących absolwentami studiów II stopnia na Wydziale);
2. zatwierdzić indywidualny plan studiów na 1. semestr;
3. zaopiniować ewentualny wniosek doktoranta w sprawie przyznania jednostek dydaktycznych za przedmiot prowadzony poza Wydziałem (jeśli przedmiot taki występuje w indywidualnym planie studiów na 1. semestr);
4. wypełnić w porozumieniu z doktorantem formularz " [Pracownia naukowa 1: karta informacyjna](#) ".

b) przed rozpoczęciem 1. semestru studiów

1. opracować - wspólnie z doktorantem - w miarę możliwości kompletny program i plan studiów (zestaw przedmiotów w kolejnych semestrach);
2. określić- w porozumieniu z kierownikiem zakładu - miejsce pracy doktoranta;

Supervision



advisor/supervisor

- assistance in development of individual study programme (selection of courses)
- assistance in development of research plans
- monitoring of student's progress in research and providing student with feedback
- assessment of student's research report (submitted at the end of each semester), including comments
- assessment of students's seminar presentations (each semester)

Director of PhD Programme

- final assessment of student's research report and **advisor's comments**
- monitoring of student's progress in coursework
- monitoring of student's performance in teaching

***supervision
of advisors***

Support for international mobility

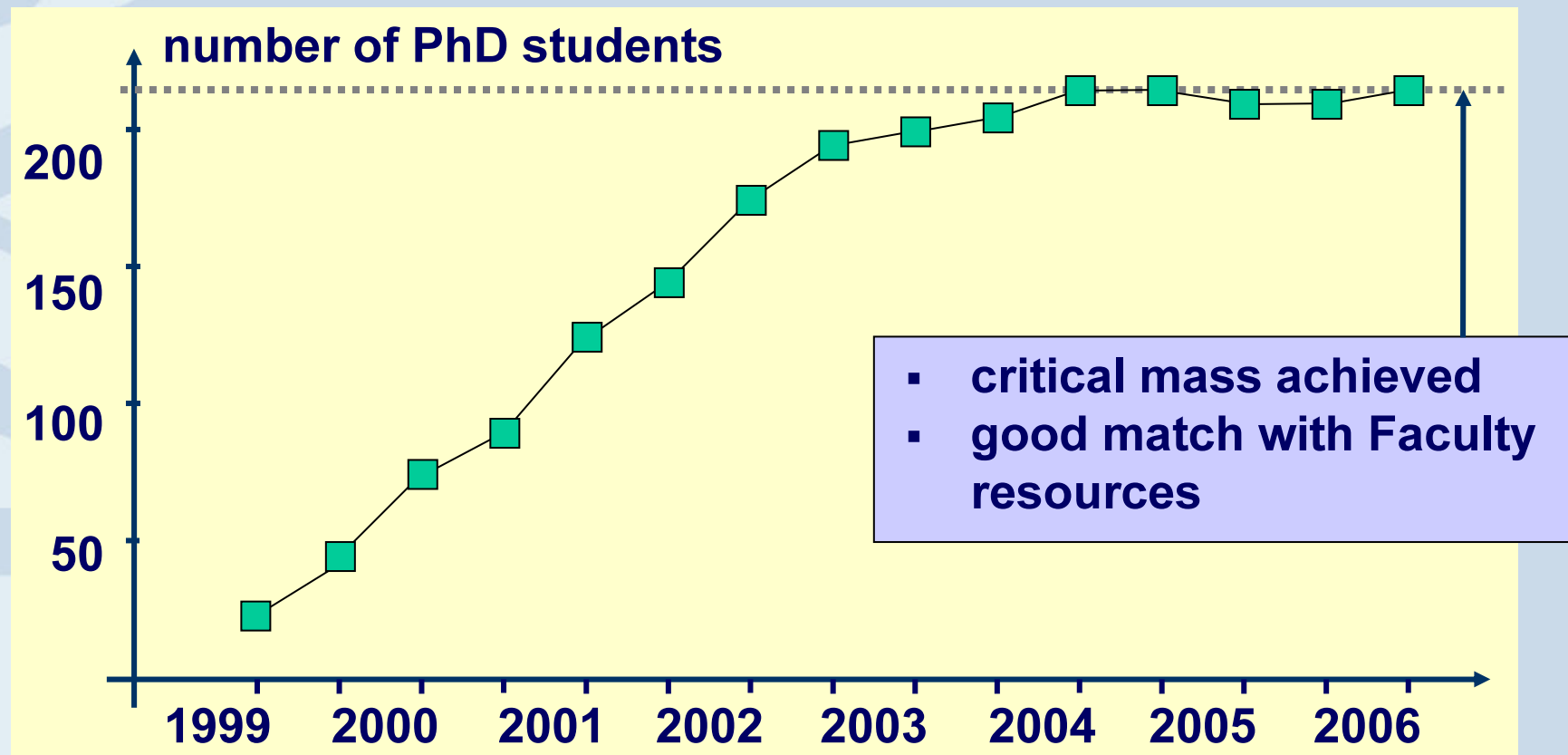
- ❑ **ECTS for credit transfer and accumulation**
- ❑ **flexible registration requirements – pace of studying adjusted by the student**
- ❑ **special provisions in academic regulations to support international mobility (relaxation of registration requirements)**
- ❑ **links with the PhD programme taught in English, intended mainly for foreign students**
- ❑ **Dean's fund to support the participation of PhD students in international conferences**

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- **New PhD programme at the Faculty of Electronics & Information Technology**
 - characteristics (with emphasis on curriculum)
 - **experiences**
- Conclusion

After 7 years

- ❑ 45-75 candidates admitted each year
- ❑ admissions - every semester



Popular view: ECTS - not suitable for doctoral programmes

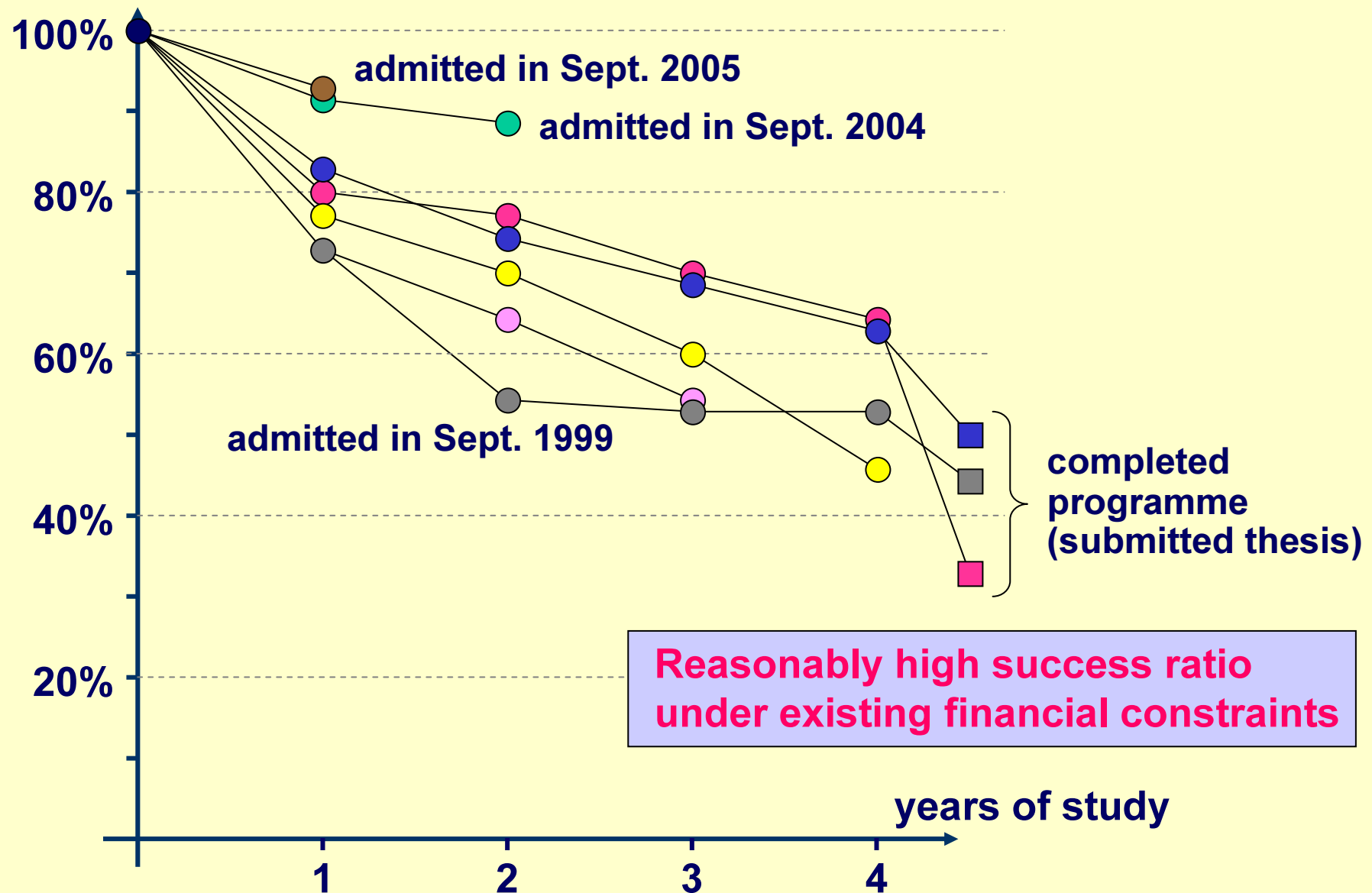
**only 27% of European universities apply
ECTS for third-cycle**

*D. Crosier: Trends V – presentation of initial results,
EUA Council meeting, 19 Oct. 2006*

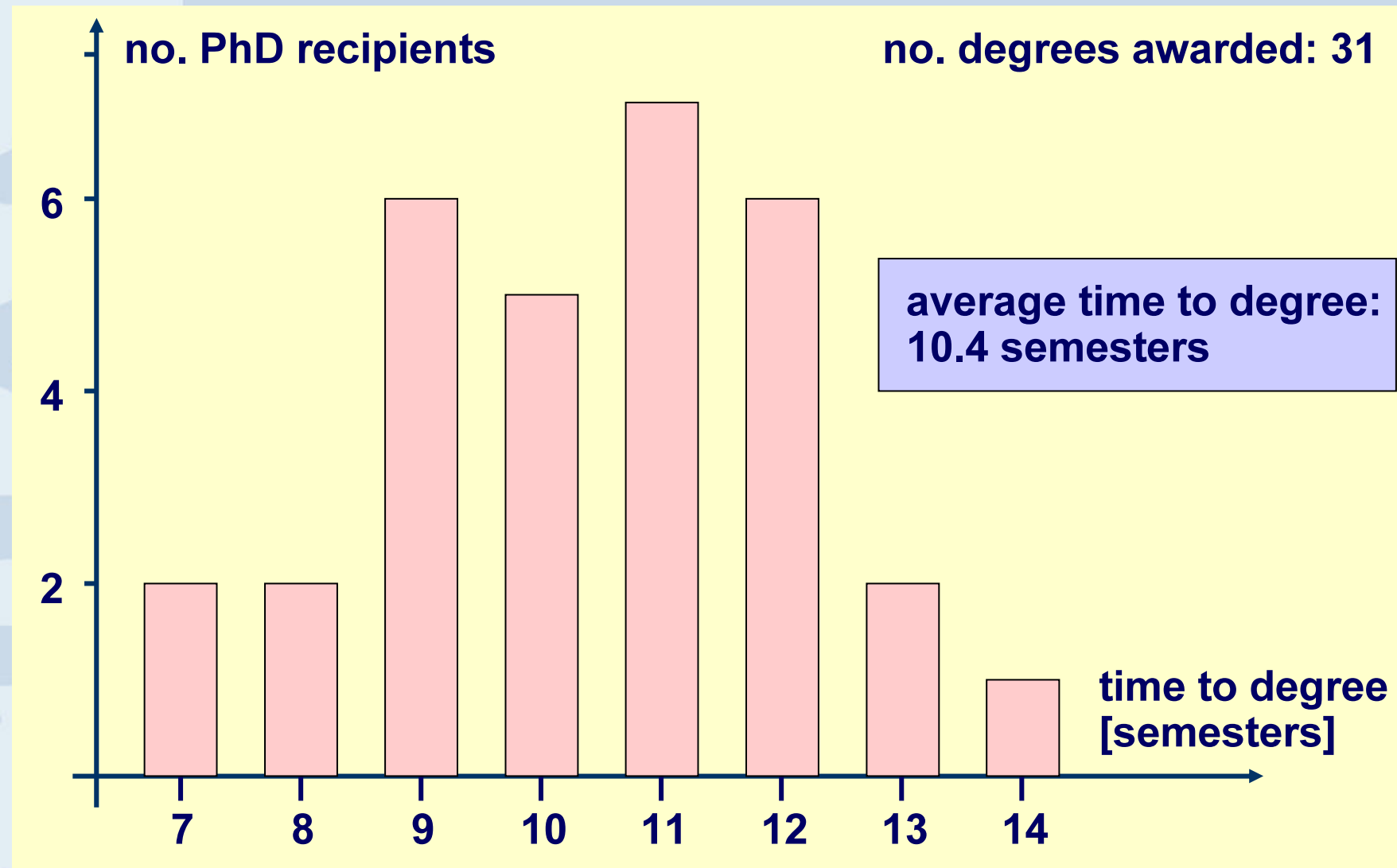
Positive experience

- ❑ **ECTS - useful mechanism for recognition of courses and other forms of formal training offered by different institutions**
- ❑ **importance of individual research clearly emphasized by assigning a large number of ECTS points to a course formally called “PhD research”.**
- ❑ **possibility to use the same procedures and the same information system for all 3 cycles in the Bologna structure**

Attrition



Time to degree



Growing diversification

- ❑ **Growing diversification of candidates**
among students admitted in Sept. 2006
> 25% graduates from other HEIs
- eng. and non-eng. schools
- ❑ **Growing diversification of research topics**
more interdisciplinary theses
- ❑ **Candidates from other HEIs perform – on average**
– better than our MSc graduates

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Looking to the future

**problems and challenges
related to PhD training**



**discussion on the model
of doctoral training**

**nationwide debate on the model
of academic/research career**
initiated by CRASP



**different visions of doctoral training
implemented by individual HEIs and
individual faculties**

trends observed
in Europe and
outside Europe

international
debate on
doctoral training

Looking to the future - example

PhD programme

at Faculty of Electronics and Information Technology

- ❑ part of 3-cycle Bologna structure
integrated with MSc programme
- ❑ ECTS-based curriculum requirements and academic regulations
- ❑ support for interdisciplinary education

Our answer to

„a need for a transparent, readable and comparable third degree”

- one of the main goals of the Bologna Process

[Bologna Process between Prague and Berlin – Report to the Ministers of Signatory Countries, Sept. 2003]