



The Belgian Nuclear higher Education Network

*Prof. Dr. Ir. Jacqueline LECOMTE-BECKERS
PAST Chair of the BNEN Steering Committee*



What is BNEN ?

- **Belgian Nuclear Higher Education Network**
- **Aim : to maintain and further develop a high quality program in nuclear engineering in Belgium**
- **provides joint Master after Master combining the expertise of**
 - **6 Belgian Universities**
 - **Nuclear Research Center SCK-CEN**
- **courses taught in English**
 - **at a single location**
 - **in a highly modular way**

Previous situation

Postgraduate studies (1 year) :

**VL: Gediplomeerde in de Gespecialiseerde Studies
van Nucleaire Techniek (G.G.S.)**

**FR: Diplôme d'Études Spécialisées en Génie Nucléaire
(D.E.S.)**

About 10 to 15 students per year (+ others)

Before BNEN

- KULeuven and UGent offered every two years a combined programme (one course per topic) - GGS
- ULg, UCL, ULB and UMon offered a combined programme (multiple courses per topic, students could “shop”) - DES
- The number of students was decreasing and it was hard to keep both programmes alive
- In 2002, the BNEN was born

Aim of the BNEN

- To preserve nuclear education at the university level
- To offer holders of a Master in Science a “Master-after-Master” degree focused on nuclear engineering
- To offer a flexible environment, not only for full-time students but also for young professionals, to obtain the degree
- To offer the possibility for not-so-young-anymore professionals to update their knowledge
- To fit the requirements of a “European Master Degree”

History - { BNEN ENEN

- **2000: BNEN: beginning of negotiations**
- **2002: BNEN: signature of the consortium agreement (5 univ.)**
- **Oct. 2002: BNEN: opening of the 1st academic year**
- **Oct. 2010: BNEN: opening of the 9th academic year**
- **2003: creation of ENEN (FP6), initiatives in several countries: Italy (CIRTEN), UK (NTEC), D (ILK)**
- **End 2005: first certificates of « European Master of Science in Nuclear Engineering »**
- **2005-6: external and international assessment of the BNEN program**
- **2006: ULB joins the consortium (6 univ.)**
- **2007: recognition according to the new decrees : Master after Master**



What is the BNEN in 2010 ?

- **A consortium of 6 Belgian Universities (VUB, UGent, KULeuven, ULg, ULB, UCL) and the SCK•CEN**
- **The universities are responsible for the academic content of the BNEN programme (by means of the courses organised and the professors who give them)**
- **The SCK•CEN is responsible for the BNEN administration and for the exercise sessions, laboratory sessions and some technical visits**



BNEN Programme

- **An equivalent one-year “Master-after-master”**
 - **60 ECTS**
 - **Open for Engineers (→ expert class 1)**
 - **Open for Physicists, Mathematicians, Industrial engineers, ...**

After successful completion of a make-up programme

- **Students enrol at one of the six universities and receive their degree from that university plus a BNEN certificate**
- **Courses : In English at SCK – CEN premises**
 - **Modular set-up**
 - **A set of advanced/elective courses**



BNEN Programme

- **Access to single courses for other students (masters and ERASMUS/ENEN) registered in one of the partner universities**
- **Access to single courses in the framework of SCK•CEN (Continuing education)**

BNEN Organisation

- **The BNEN steering/teaching committee**
 - A member of each partner
 - Convenes about 10 times per academic year
 - Practical organisation, student matters (grants, calendars, logistics)
 - Chair and vice-chair elected for a two years period
- **Current names**
 - Past Chair: Jacqueline Lecomte-Beckers (ULg) (2006-2008)
 - Chair: Jean-Marie Noterdaeme (UGent) (2008-2010)
 - Vice-chair : Pierre-Etienne Labeau (ULB) → Chair (2010-2012)
 - Administration manager: Gert Van den Eynde (SCK•CEN)
 - Secretary: Ingrid Van Regenmortel (SCK•CEN)



BNEN Stakeholders

- **The six universities and SCK•CEN**

- Responsible for the programme

- **Scientific partners**

- IRE, IRMM, ...

- Involved in the organisation of advanced/elective courses

- **Industrial partners**

- Suez (Electrabel, Tractebel), FANC, AVN, Belgoprocess, NIRAS/ONDRAF

- Financial support and/or student grants

- Source of students (often young-professionals)



BNEN Detailed share of teaching responsibilities

	Total ECTS	KULv	UG	VUB	UCL	ULg	ULB
Nuclear energy: introduction	3	3					
Introduction to nuclear physics:	3			3			
Nuclear reactor theory and experiments	8	2	3		3		
Nuclear thermal-hydraulics:	6				6		
Operation and control:	3		3				
Reliability and safety:	3	3					
Nuclear fuel cycle and applied radiochemistry:	3					3	
Nuclear materials I:	3					3	
Nuclear materials II:	3	3					
Radiation protection and nuclear measurements:	6		4	2			
Advanced topics (*)	4						4
Project and internship:	15						
Total:	60						

Modules

Block I

<i>Nuclear energy: introduction</i> W. D'haeseleer	3 ECTS 4x5h + 10h els
<i>Introduction to nuclear physics</i> A. Hermanne	3 ECTS 4x5h + 10h els
<i>Nuclear Materials I</i> J. Lecomte-Beckers	3 ECTS 4.5x4h + 10h els
<i>Nuclear fuel cycle and applied radiochemistry</i> P. Mathieu	3 ECTS 5x4h + 10h els
<i>Nuclear Materials II</i> W. Bogaerts and E. van Walle	3 ECTS 7x3h + 10h els
19 ECTS	

October –
December

Block II (or ENENI block)

<i>Nuclear reactor theory</i> W. D'haeseleer (2 ECTS) J.-M. Noterdaeme (3 ECTS) H. Aït Abderrahim (3 ECTS)	8 ECTS
<i>Nuclear thermal hydraulics</i> Y. Bartosiewicz and M.Giot	6 ECTS
<i>Radiation protection and nucl. measurements</i> H. Thierens and K. Bacher (4 ECTS) S. Tavernier (2 ECTS)	6 ECTS
20 ECTS	

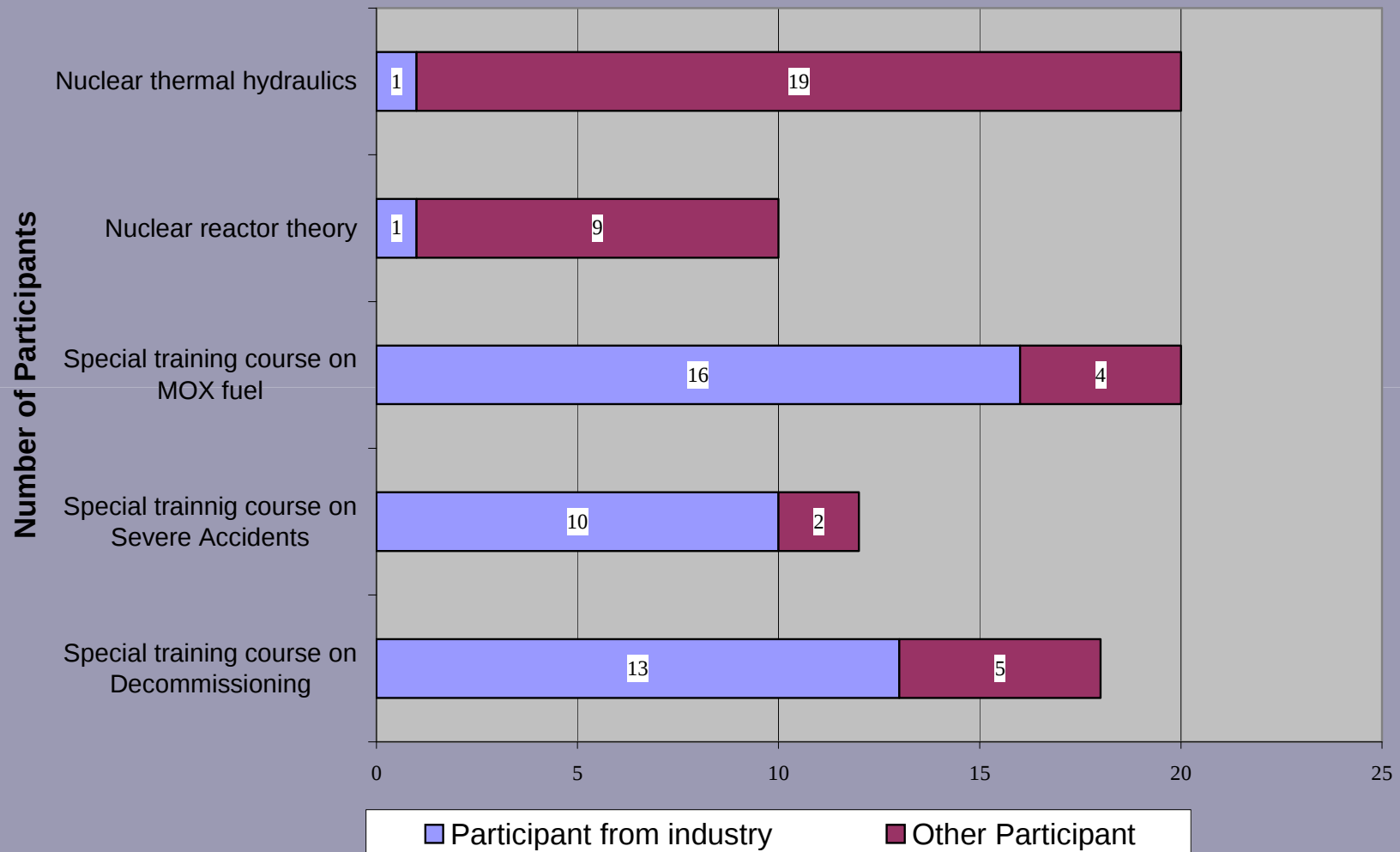
January –
February

Block III (or ENENII block)

<i>Operation and control</i> W. Van Hove and G. Janssens-Maenhout	3 ECTS 5x4h + 10h els
<i>Reliability and safety</i> A. Poucet	3 ECTS 20h+10h els
21 ECTS	

March
+Thesis

Overview of the Elective and Advanced Courses



September 2^d, 2010

Rencontre SCK-CEN-ULg

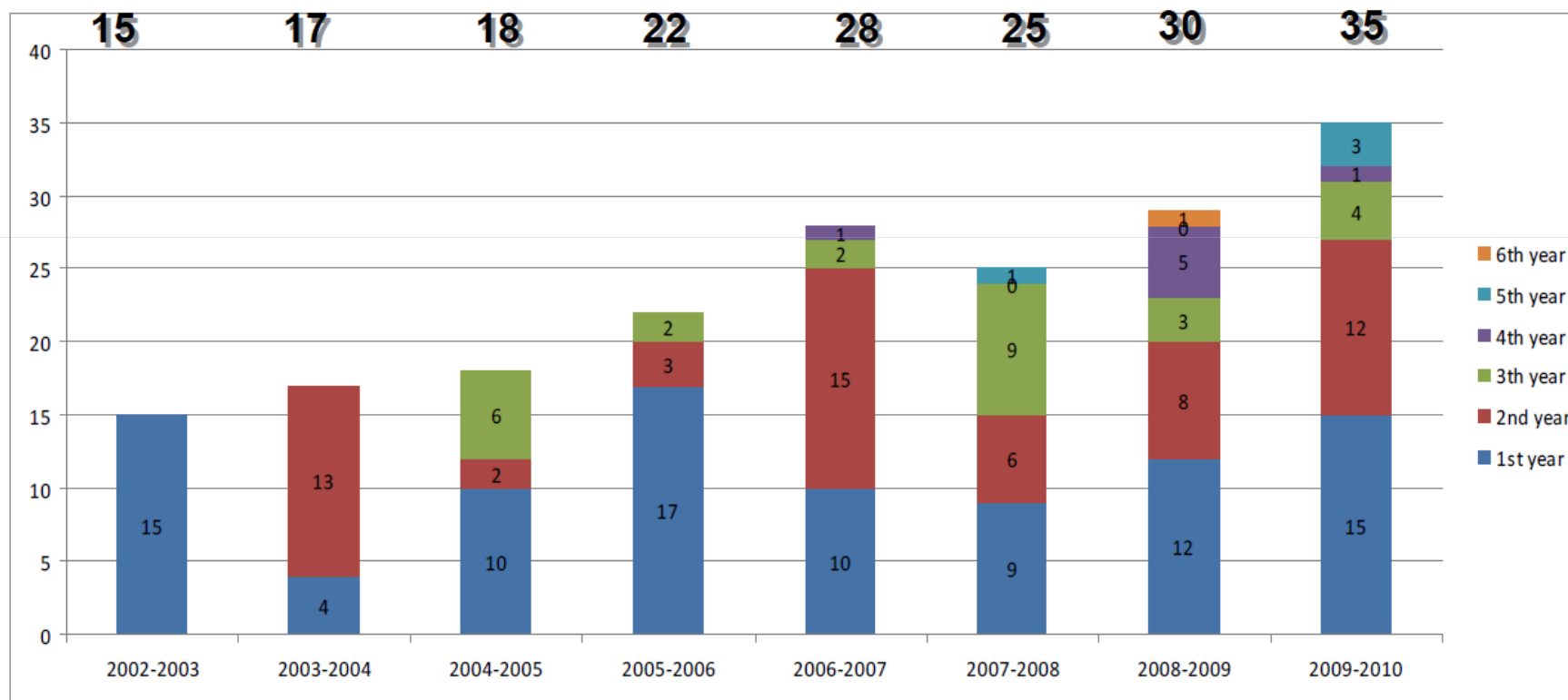
BNEN pitfalls

- **Six universities**
 - **Six different rectors and visions**
 - **Six different academic and deliberation rules**
- **Two regions (Flemish, Walloon)**
 - **Two different authorities**
 - **Two different education decrees**

These issues are tackled as good as possible using common sense and a no-nonsense approach

Some statistics

number of students in ManaMa

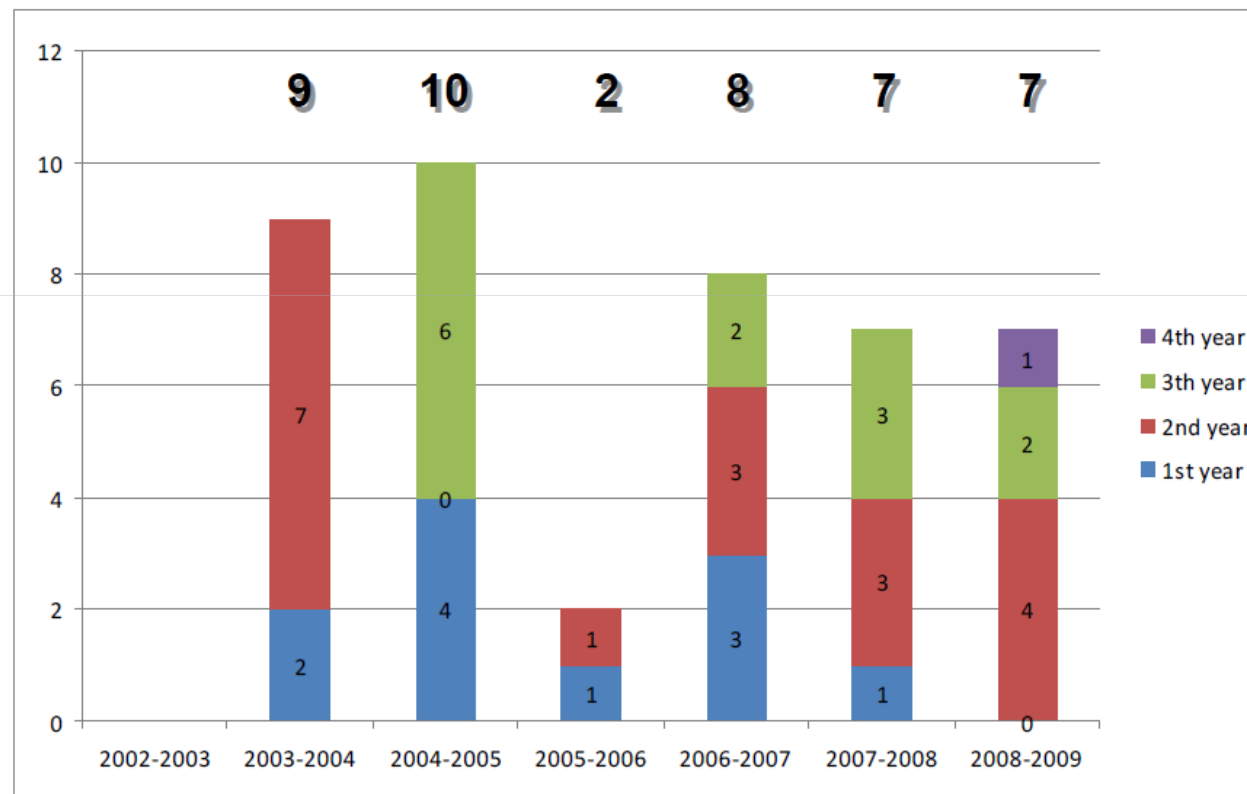


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Rencontre SCK-CEN-ULg

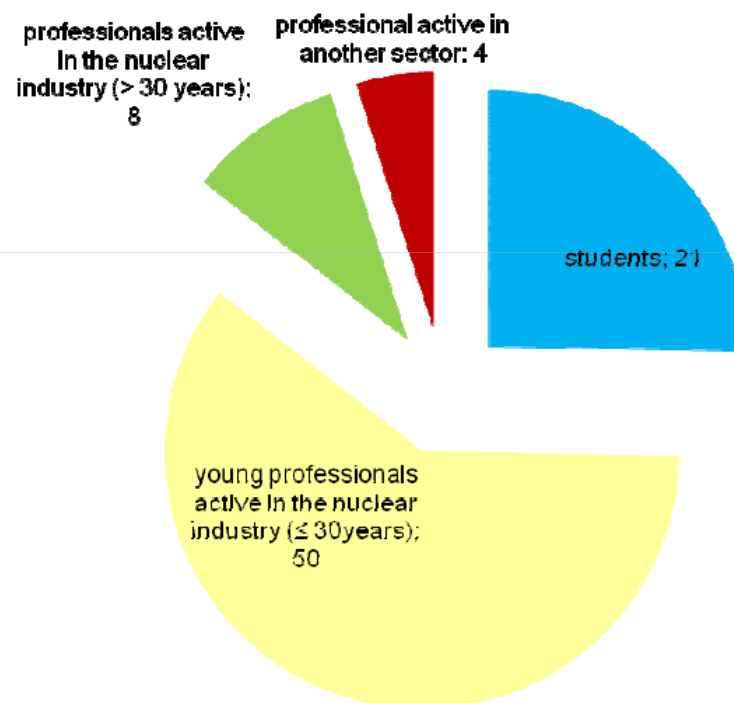
Some statistics

44 graduates



Some statistics

Approx 2/3 are young professionals



Feedback from the students (evaluation)

good to very good

