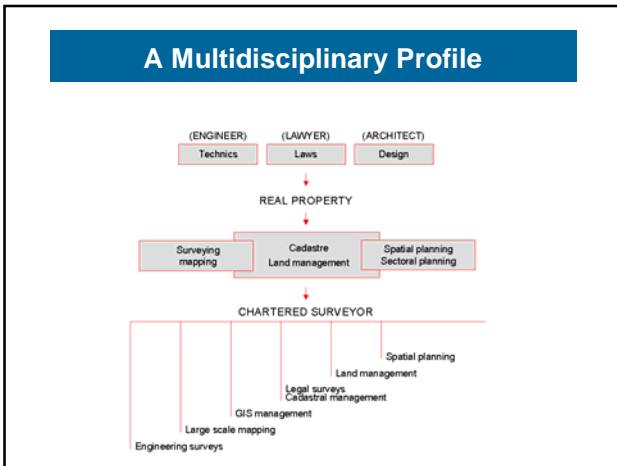


**Building the Educational Competences of the Future**  
**Designing a New Curriculum in Surveying**

Professor Stig Enemark  
 Aalborg University, Denmark

3rd FIG Regional Conference, Jakarta, October 3-7, 2004

## The Surveyors Profile



[www.ddl.org/thedanishway](http://www.ddl.org/thedanishway)

## THE DANISH WAY

AN INTERNATIONAL PUBLICATION SERIES  
 ON SURVEYING, CADASTRE AND LAND MANAGEMENT  
 IN DENMARK

<ol style="list-style-type: none"> <li><b>1 Land Administration in Denmark</b> Stig Enemark - 11 pages</li> <li><b>2 Spatial Planning in Denmark</b> Stig Enemark - 9 pages</li> <li><b>3 The Land Market in Denmark</b> Jens Nielsen - 11 pages</li> <li><b>4 The Surveyors' Tribunal</b> Jens Nielsen - 12 pages</li> <li><b>5 Code of Surveying Practice</b> DLS - 5 pages</li> </ol>	<ol style="list-style-type: none"> <li><b>6 The Surveying Profession in Denmark</b> Stig Enemark - 12 pages</li> <li><b>7 Land and Environmental Management in Denmark</b> Stig Enemark - 12 pages</li> <li><b>8 Property Valuation and Taxation in Denmark</b> Jens Nielsen - 10 pages</li> <li><b>9 Spatial Information Management in Denmark</b> Hanne Brande Lichtenhan - 15 pages</li> <li><b>10 Topographic Mapping in Denmark</b> Søren Rasmussen Nielsen - 13 pages</li> </ol>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

The publications are available at:  
[www.ddl.org/thedanishway](http://www.ddl.org/thedanishway)  
 Publications in print can be obtained from:  
 The Danish Association of Chartered Surveyors  
 Lyngbørgs Allé 4, DK-1205 Frederiksberg, Denmark  
 Phone: +45 3890 1070 Fax: +45 3894 0272  
 E-mail: ddl@ddl.org

## The Aalborg Model

- **Problem Based Learning**
  - Based on real-life problems in surveying
- **Project Organised Education**
  - Project work supported by lecture courses
- **Group Work**
  - groups of four to six students
  - supervised by the teachers
- **Interdisciplinary Studies**
  - Integration of theory and practice
  - Focus on Learning to Learn

## Flexibility and Adaptability

Study start

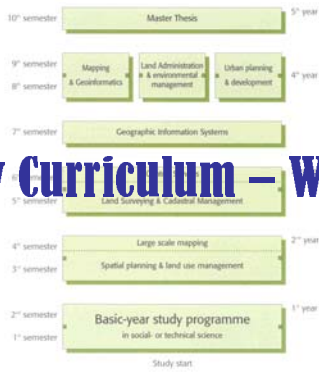
- 5<sup>th</sup> semester: Master Thesis (3<sup>rd</sup> year)
- 4<sup>th</sup> semester: Mapping & Geoinformatics, Land Administration & Environmental Management, Urban planning & development (4<sup>th</sup> year)
- 3<sup>rd</sup> semester: Geographic Information Systems (3<sup>rd</sup> year)
- 2<sup>nd</sup> semester: Control Surveys, Land Surveying & Cadastral Management (3<sup>rd</sup> year)
- 1<sup>st</sup> semester: Large scale mapping, Spatial planning & land use management (2<sup>nd</sup> year)
- 0<sup>th</sup> semester: Basic-year study programme in social or technical science (1<sup>st</sup> year)

- The adaptability of each term
- The adaptability of the curriculum
- The adaptability of the graduates

Evolution of the Professional Profile of the Danish Surveyor

Year	N	Other Areas	Mapping and Engineering Surveying	Cadastral Work	Planning and Land Management
1967	N=458	~10%	~30%	~40%	~20%
1977	N=623	~10%	~30%	~40%	~20%
1987	N=758	~10%	~30%	~40%	~20%
1997	N=832	~10%	~30%	~40%	~20%

# New Curriculum – Why ?



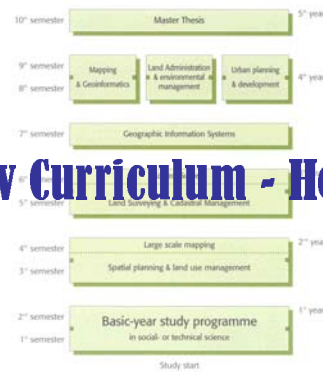
## Universities in transition

- A new law of university governance
  - A council with majority external members from the trade and industries
  - The council employs the rector
  - The rector employs the deans, who will employ the head of departments
  - Faculty and department boards will be replaced by academic councils
  - The study boards will still be responsible of the educational programmes
- A new structure for the University programmes
  - The Bologna-agreement 3+2+3 principle
  - 3-year Bachelor programme; 2-year Masters programme; 3-year Ph.D.
  - Master programmes are open for various bachelor programmes
- A new law for the university programmes
  - Only one law regulating all educational programmes
  - All programmes must be revised and adjusted to the new structure

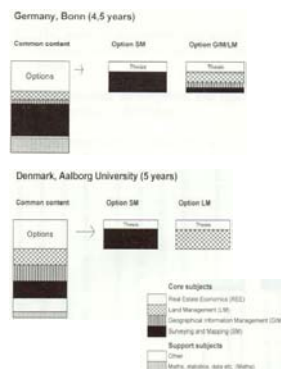
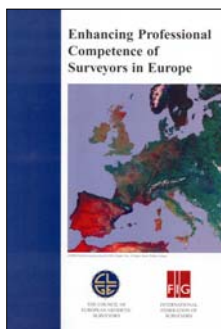
## A new 3+2 structure Consequences for the surveying education

- Will bachelors possess the necessary competences ?
  - A broad education within both technical and social science
  - Bachelor: three years of know-how studies, Masters: two years of know-why
  - Existing 2½ year technical college program in surveying and mapping
  - Is the labor market prepared for bachelors ?
- Focus on the five-year masters programme
  - To obtain a license for cadastral surveying requires a five year programme plus three years of professional practice.
  - Without the demand for a full scale five year programme, it may easily be divided a technical and a social science part
- The title of the graduates ?
  - The title is supposed to follow the masters specialisation
  - However, the title Chartered surveyor should be exclusive for the graduates having followed the full five program in surveying.

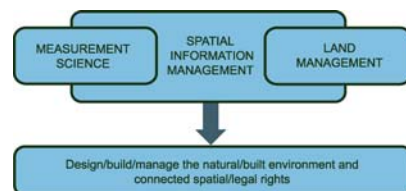
# New Curriculum - How ?



## International trends



## The Educational Profile



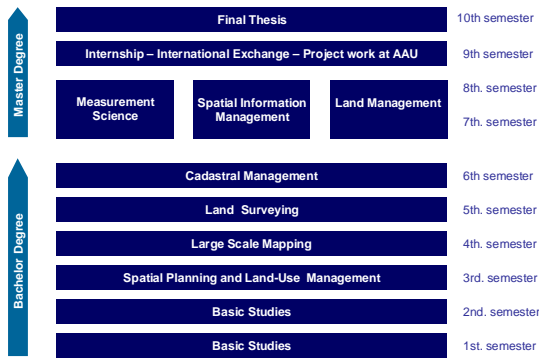
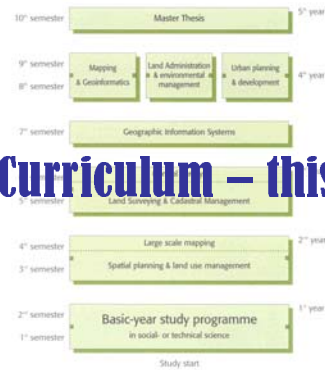
THE EDUCATIONAL PROFILE OF THE FUTURE

## Competences of the graduates

A survey of the last ten years of graduates  
Answering 75% ~ 300 graduates (1/3 female)

- Overall assessment of the programme  
83% good or very good  
2% bad
- Professional qualifications  
Fine match between the qualifications obtained, and the competences asked for in practice
- General qualifications  
Interdisciplinary skills, problem solving, communication, and management – also a fine match.

## New Curriculum – this way:



New Curriculum in Surveying - 2004

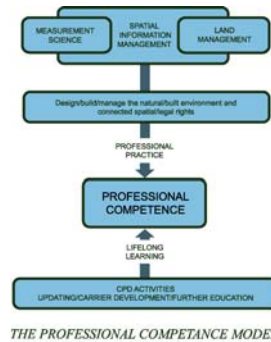
## ... A new curriculum

- Adapted to the new 3+2 structure
- Adapted to the international trends
- Professional areas adapted based on the survey of competences of the graduates
- The programme is secured for a 10 ten year period ahead
- The "Aalborg model" is maintained including the problem-based project work
- Continuing development of implementing IT in the educational process and in the interaction between education, research and professional practice.

## Promotion



## The competences of the future...



THE PROFESSIONAL COMPETENCE MODEL

## ... The competences of the future

- The surveyors' educational council
  - Representatives of the employers within the different professional areas + professors and students, in total 18 members
  - Discussion on the competences of the future in a visionary perspective
- The only surveying programme in DK
  - Special demands of development and innovation
  - On the forefront – and preferably a little ahead
- The new curriculum is another step forward
  - for building the competences of the future



Thanks for your attention