


Institut Agronomique et Vétérinaire Hassan II
Filière de Formation en TOPOGRAPHIE



ISSUES AND CHALLENGES OF THE
SURVEYING ENGINEERING EDUCATION
IN MOROCCO
PRESENT AND FUTURE

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OUTLINE

- Introduction
- HISTORICAL OVERVIEW
- THE CURRENT EDUCATIONAL PROGRAM
- HUMAN AND MATERIAL RESSOURCES
- CHALLENGES OF THE FUTURE EDUCATIONAL PROGRAM
- RESEARCH
- Conclusion


1- Introduction

The Institute of Agronomy and Veterinary medicine Hassan II

- Education
- Research
- Development


Six branches of Education

- surveying engineering,
 - engineers in agronomy,
 - agro-food engineering,
 - engineers in farming equipment,
 - veterinary medicine,
 - horticultural engineering



1- Introduction

The Surveying Engineering Branch



In early 1970's:

- dedicated to graduate surveying engineers based on **four-year** program (ingénieurs d'application)
- the needs of the agriculture Ministry (Administration of Land registration, Cadastre and Cartography)

In 1988:

- new needs of the professional users & rapid technological developments,
- extend the educational program to the teaching of the advanced technologies in the domain of Geodetic Science and Geo-information (**six-year**)

1- Introduction


The Surveying Engineering Branch

In 1994:

- the surveying profession was organized (law 30-93).
- these texts legalize the exercise of the profession of a Surveying Geometer Engineer (Ingénieur Geomètre Topographe).

2004-2005:

- various mutations and reforms of the university's educational system,
- constraints and employment opportunities,
- review the curriculum of the surveying education (**five-year**).



2. HISTORICAL OVERVIEW


1970 to 1988
437 engineers (4-year)
14 from Africa (tu, Ni, Mau, Cam)

↓

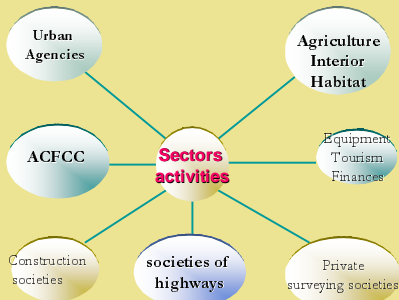
1988 to 2004
437 engineers (6-year)
13 from Africa (Ben, B Fa, Tog)
15 (licence)
45 (Math sp & D)

↓

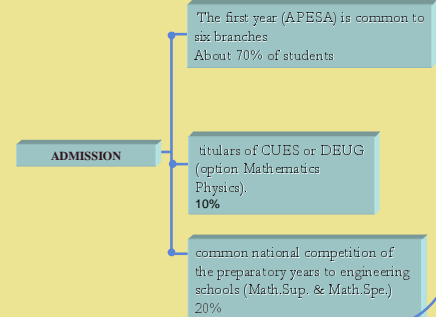
2004
*New system



2. HISTORICAL OVERVIEW



3. THE PRESENT EDUCATIONAL PROGRAM



3. THE PRESENT EDUCATIONAL PROGRAM

Curriculum programs are conceived for requirements of professional needs

1. Fundamental Sciences:
Mathematics, physics, computer science, statistics, probability

2. Basic Education
Professional education: Geodesy, Surveying, Photogrammetry, Cartography, land regulation, cadastre
Professional connected education: Road network, Consolidation, Purification, urban and rural planning, allotment, hydraulics
General education: Civil law, Economy, Communication, Marketing, Management, Languages, sports

3. THE PRESENT EDUCATIONAL PROGRAM

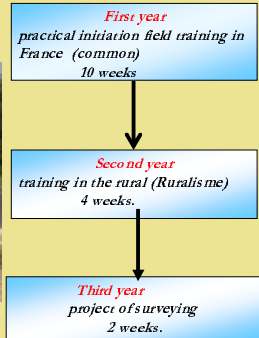
3. Advanced Techniques:
Global Positioning System (GPS), numerical surveying, analytical and digital Photogrammetry, Numerical cartography, Remote sensing and satellite imagery, Geographic Information Systems

4. Practical projects and field trainings: Laboratories, field trainings, cadastre and training in professional and private societies.

5. Research seminars, thesis preparation and oral examination

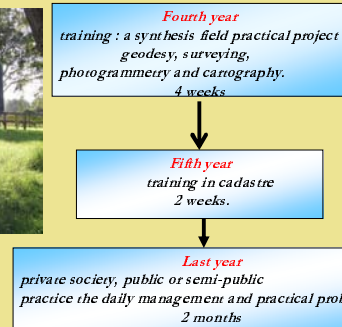
3. THE PRESENT EDUCATIONAL PROGRAM

Field Trainings



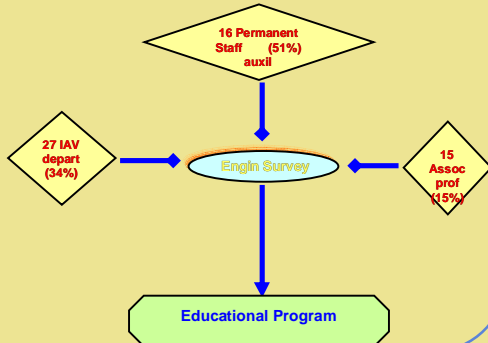
3. THE PRESENT EDUCATIONAL PROGRAM

Field Trainings



4. HUMAN AND MATERIAL RESSOURCES

Human ressources



4. HUMAN AND MATERIAL RESSOURCES

- 2 departments
- 3 labo
- 1 continuing education center
- 4 PC laboratories
 - conventional technical instruments
 - electronic total stations and levels
 - GPS receivers,
 - analytical and digital photogrammetric instruments,
 - stations of satellite imagery processing.
 - softwares: photogrammetry, remote sensing, digital cartography, GIS, geodesy and surveying. .





5. CHALLENGES OF THE FUTURE EDUCATIONAL PROGRAM

Factors:

- ❖ The attributions of a surveying engineer as defined by law 30-93
- ❖ The reform of the Moroccan university system based on the law 01-00
- ❖ The recommendations of the Project of establishment of the IAV Hassan II
- ❖ The demand and opportunities of employment by private and public sectors
- ❖ The evolution of new technologies of information and communication
- ❖ The adoption by the ministry of higher education of a global educational architecture similar to that of the European countries (LMD: License, Master, Doctorate)

5. CHALLENGES OF THE FUTURE EDUCATIONAL PROGRAM

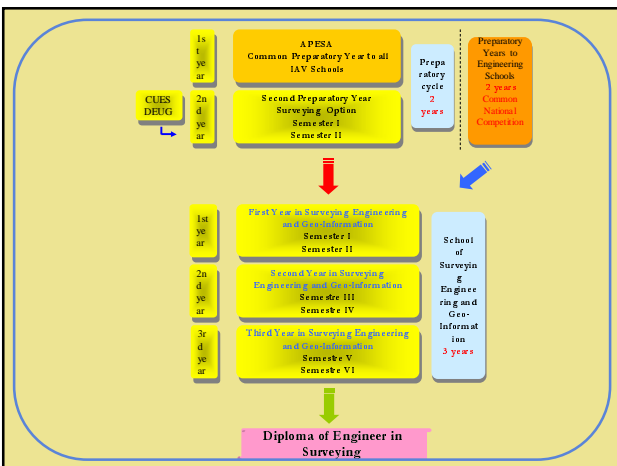
New programs are established taking into account the following factors

- ❑ The professional requirements
- ❑ The advances in the new technology
- ❑ The necessities of the employment opportunities
- ❑ The available hardware resources in the institution
- ❑ The available human resources to dispense these contents
- ❑ The existing curriculum

5. CHALLENGES OF THE FUTURE EDUCATIONAL PROGRAM

General architecture of the new curriculum

- IAV Hassan II will be transformed into a Polytechnic Institute - 8 schools of engineering
- agronomy
- agro-food
- veterinary medicine
- Horticulture....
- it is proposed that the new name of the branch of surveying will be the
School of engineering surveying and Geo-information
5 years
- two first are preparatory studies in basic courses



5. CHALLENGES OF THE FUTURE EDUCATIONAL PROGRAM

New curriculum

The new curriculum provides a polyvalent education considering the practical and theoretical components such as:

- **Professional courses** (Geodesy, Cartography, Remote sensing, Surveying, Photogrammetry, GIS, spatial analysis, geospatial databases, Adjustment computation, Astronomy)
- **Professional connected courses** (land consolidation, hydraulics, land management, hydraulics, urban and rural management, road networks, purification network, allotment projects...)
- **General courses** (law, marketing, management, economy, finance, communication, ecology, environment, etc).
- **Practical works** (laboratories, practical project works, field training works, seminars, thesis...)

5. CHALLENGES OF THE FUTURE EDUCATIONAL PROGRAM

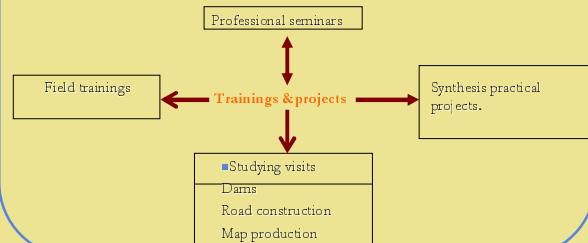
New curriculum

- ✓ System of semesters (two semesters per year).
- ✓ Each semester is 14 to 16 weeks
- ✓ Average total credit hours of a semester is around 400 hours.
- ✓ The last two weeks of a semester are reserved to evaluation and exams.
- ✓ Courses are grouped into modules
- ✓ Maximum total credit hours of a module is 120 hours

5. CHALLENGES OF THE FUTURE EDUCATIONAL PROGRAM

Trainings and projects

The new vision of the education in surveying engineering aims to give a particular attention to the professional education



5. CHALLENGES OF THE FUTURE EDUCATIONAL PROGRAM

Field trainings

First year of engineering surveying:

- - Project of surveying
- - Training in cadastre

Second year of engineering surveying:

- - Practical project in surveying, geodesy, photogrammetry and GPS
- - Project of digital cartography
- - Training in a private society, public or semi-public administration
- - Studying visits
- - Professional seminars

Third year of engineering surveying:

- - Project of geomatic
- - Studying visits
- - Professional seminars

6. RESEARCH ACTIVITIES

Three research activities

- the activities of the end of studies research thesis;
- the activities of doctoral research;
- the contractual research.

Axis of research

- Assessment and development of methods and techniques concerning data collection and data processing & analysis
- analysis and presentation of the geographical information;
- contribution of the new technologies in various studies and applications,
- adaptation and improvement of the procedures of the existing software, by developing users' interfaces

Continuing education

Continuing education programs:

- Sevréal private societies
- public administrations

Programs

- GPS
- GIS
- Remote sensing
- Surveying Total ST
- Cartography
- Photogrammetry

Special programs

- Libya
- Oman

7. CONCLUSION

- issues and challenges of the educational surveying system in Morocco
- the improvements achieved since 1970.
- efforts made to elevate and develop professional competences.
- The strategies followed take into account
 - the needs of the professionals,
 - the employment market
 - the reform of the Moroccan university







Thank You for your attention