

**Report to the 29th General Assembly
FIG Congress in Munich, October 2006**

FIG Commission 2 – Professional Education

Report of Activities 2002-2006

1. General

1.1 Considerations

The Munich Congress represents the end of the 2002 – 2006 term of office for Commission 2 and it is now time to give, although briefly, a report of activities during this time, goals achieved, works to be continued in the future, first steps in new targets, failures, etc.

Commission 2 has a fundamental role in the education of the incoming professionals, mainly in a world where globalization is the most relevant fact we are living nowadays; FIG, through Commission 2, should be the leader the Academic and Professional world in such a way that mobility among different countries, cultures and societies become a reality in the next future.

Commission 2 activities during this term of office has shown how big are the differences among different continents, countries, idiosyncrasies, and how difficult is to establish a common way of doing (in fact, this is an impossible target); every continent, country, has special characteristics that obliges to tailor a different approach to every different location; our experiences in Latin America and Africa have been an excellent show of these problems.

1.2 Mission Statement

According to our Work Plan our Mission statement was:

- Methods and content of education
- Interaction between academia and practice
- Academic and professional profiles
- Accessible knowledge
- Educational links
- Cooperation

In our Work Plan we said:

“...most of our activities for this period are focussed in the third world, where the FIG action is more necessary and of benefit for many more people with special emphasis, actions to be carried on in Latin America. This requires a short explanation:

- Latin-America has a very weak representation in FIG, although they are more than 20 countries.
- Latin-America can be considered the continent of the future.
- In some Latin-American countries there are good theoretical Educational Institutions in Surveying (unfortunately we cannot say the same about docent facilities),and in some

others there is nothing at all or very poor facilities in this field, what makes necessary the FIG's action at University level, as first step, and at professional level later”.

So, most of our activities have been linked to this continent and, after the Marrakech Regional Meeting, to Africa as well.

2. Achievements

Commission 2 activities have been mainly focussed in the third world, where there have been some success and failures.

The most important success has been in Latin-America: As we will see later there have been several new universities becoming Academic Members, several new full member countries and an Educational Network has been established, with a promising future of activities and harmonization and creating some new Departments of Surveying in countries where there was none at all.

Unfortunately in Africa we had not such a results, although the enormous efforts of Professors Rüter (South Africa) and Semlali (Morocco). Several questionnaires were sent to all over the continent and many personal contacts were made, but very poor results were achieved, mainly in the Sub-Saharan Africa, a bit better in the North Africa, the Middle East and the Gulf Countries, as it can be seen in the attached report.

However, activities on “Virtual Academy”, under responsibility of Professors Haggrén (Finland) and Munk Sorensen (Denmark) continued and a final Workshop was held during the Cairo Working Week, the same should be said regarding the common activities of Commissions 2 and 3, every summer in Hungary, under the leadership of Prof. Markus, Chair Elect of Commission 2, with a big number of participants and excellent papers and activities.

Last April there was an excellent Workshop, jointly organized by Comm. 2, 3 and 7, held in Budapest with a big number of participants and many interesting papers (a report on it can be seen in the FIG web page).

2.1 Working Groups

In the Work Plan following Working Groups were established:

WG 2.1 – Virtual Academy

Chair: Prof. Henrik Haggrén (Finland)

Co-Chair: Prof. Esben Munk Sørensen (Denmark)

During the Cairo WW there was a Workshop on **Virtual Academy and Surveying/Geoinformatics Community**, organized by Profs. Munk Sorensen and Markus, where several papers were given, most of them of a high interest. This Workshop, together with that held in Helsinki University in 1996, closes Commission 2 activities in this field.

WG 2.2 – Curricula Models and CPD

Chair: Frank Kenselaar (The Netherlands)

Unfortunately, Prof. Kenselaar, for personal and work reasons, should leave his activities in this WG and its functions were split between WG 2.3 and WG 2.4. It was created a new WG 2.2 “The Studies of Surveying in Latin–America” chaired by Prof. Loyácono, from Argentina.

Nevertheless, Commission 2, through its Chair, developed a very active to help organizing studies of Surveying in the **Fiji Islands**; through the **South Pacific University** several countries in the zone have now access to these studies.

New WG 2.2 – The Studies of Surveying in Latin America

Chair: Graciela Loyácono (Argentina)

Activities of this WG, very summarized, have been the following:

- February 2003: **1st meeting of the WG** in Córdoba (Argentina), with participants from Argentina, Costa Rica, República Dominicana, Uruguay, Chile, Brazil and Colombia, plus the Chair of this WG and the Commission Chair. It was established the guidelines of the incoming activities and the calendar of new meetings.
- June 2003: Participation, presenting several papers and having a very strong activities during the event , in the Workshop on “**Land Administration in Central America: Challenges and Solutions**”, organized, under the umbrella of UN and inside the Programme to develop Cadastre and related topics in Central America, organized in Antigua (Guatemala); it was held a meeting with representatives of nearly all the Central American Universities in order to know their situation, projects regarding our profession, needs, lacks, etc.; it was very fruitful and, as a consequence, Guatemala has created the first School on Surveying, Cadastre and related sciences.
- April 2004: **2nd meeting of the WG** in San José (Costa Rica); information in the attached report.
- September 2005: **International Congress on Surveying**, organized by the Costa Rican Association; attending, by invitation, Prof. Loyácono.
- September 2006: WG 2.2 meeting in Córdoba (Argentina).

WG 2.3 – Mutual recognition

Chair: Dr. Frances Plimmer (UK)

A report will be given during the Munich Congress.

WG 2.4 – Knowledge in Spatial Information Management (Joint Working Group with Commission 3)

Chair: Prof. Bela Markus (Hungary)

Some of the main activities of this WG are the following:

- August 2003: **International Summer School: GI in Land Management**. The students were enrolled into 4 thematic working groups, lead by the following tutors
 - WG1: Land Administration and Cadastre
 - WG2: Land Management and Rural Development
 - WG3: GeoInformation in Nature Protection

- WG4: Lands and Mapping – Impact of the EU accession
The International Summer School is linked with FIG, UNIGIS, AGILE, EUROGI, RCoE LandNet and the Nature-GIS project of GISIG.

- August 2005: **International Summer School:** There were three different WG for the students:
 - WG1: Remote sensing based monitoring of agricultural subsidies utilization
 - WG2: Sustainable land use planning and monitoring
 - WG3: Web GIS in public use and collaboration

April 2006: **Workshop on e-Governance, Knowledge Management and e-Learning**, in Budapest. (Full information in the FIG web page)

WG 2.5 – Capacity Building in Land Management (Joint Working Group with Commission 7 headed by Commission 2)

Chair: Prof. Ulf Jensen (Sweden)

The main one was the meeting held in Copenhagen, 15 – 16 January 2002, chaired by Prof. Jensen, with the participation, among others, of Profs. Enemark and van der Molen.

2.2 Cooperation

2.2.1 Cooperation with other Commissions

Main cooperation with other Commissions has been with Commissions 1, 3 and 7, organizing joint Technical Sessions in FIG meetings, joint WGs, workshops and teaching activities.

2.2.2 Cooperation with Sister Organizations

Unfortunately it has been impossible to establish any cooperation with similar Commissions in the Sister Organizations.

Commission 2 has participated in some events organized by CLGE.

2.2.3 Cooperation with UN

Commission 2 has cooperated with UN through several activities, such as Workshops in Latin – America, activities of WG 2.4 and WG 2.5, and the Course run in Concepción under the umbrella of UNESCO Centre for Problem Based Learning.

2.3 Events

The most relevant, (that not all) events where Commission 2 has developed an active participation could be, together with that related in paragraph 1, the following:

Year 2002:

- **6th Convention on Surveying & Related Sciences.** Concepcion University (Chile)

- **5th International and 7th National Congress on Surveying.** Uruguayan Association of Surveyors.
- **Visit to School of Surveying in Córdoba (Argentina)**
- **International Symposium in Mayagüez University, Puerto Rico,** organized by the Puerto Rican Association of Surveyors.

Year 2003:

- **Marrakech Regional Conference: Round Table on Surveying & GIS Education in Africa.**
- Specific meeting with colleagues from Africa where it was decided to create an **African Educational Network**, chaired by Profs. Rüter and Semlali.
- Donation of the **Technical University of Madrid**, where the Chair is Professor, to the Departments of Surveying in the National Universities of Córdoba and Rosario (Argentina) of different teaching equipment (total stations, levels, computers, etc) for an amount bigger than 100.000 USD.

Year 2004:

- Letter to **Dr. Mayende**, South Africa, suggesting him not to close the **Department of Surveying in the Cape Town University**; in his answer he promised to delay, as much as possible, such a decision of closing the Department and so did.
- **Course developed in the School of Surveying of Concepción University (Chile)**; this course will be run during five years, taught by profs. Enemark and Cavero, under the umbrella of UNESCO, as before explained.
- **3rd Regional Conference for Asia and the Pacific – Surveying the future – Contributions to Economic, environment and Social Development**, held in Jakarta.

Year 2005:

- **Workshop on Virtual Academy; Cairo WW.**
(An unexpected and inopportune illness drastically reduced Chair's activities for several months during this year and the beginning of the following one).
- **Workshop on European Professional Qualification of Geodetic Surveyors, Brussels.** Organized by CLGE.

Year 2006:

- **Workshop in Budapest**
- **International Congress in Córdoba (Argentina).**
- **WG 2.2 meeting in Córdoba (Argentina)**
- **Concepción University course.**

On the other hand, **Commission 2 has participated in all FIG events during these years**, with several technical sessions, and many and very interesting papers, in the different events, and maintaining continuous contact with Delegates, sending, at least, **two letters per year** and with reports on all events sent to the FIG office to be put into the web page. Information on all these activities can be found in the FIG Commission 2 web page.

2.4 Publications

Commission 2 has published:

- Proceedings of the Workshop held this year in Budapest.
- Reports on activities in the Summer School, in Hungary.
- Report on Latin – American activities (attached to this report)
- Report on African network activities (attached to this report)

Commission 2 will present in Munich:

- Report on Mutual Recognition WG activities.
- Report on Virtual Academy activities.

2.5 Other Notable Achievements

When this team started its duties in Commission 2, one of the most strongly suggested activity should be developed in Latin-America, where FIG's presence was really poor, in number of members, and without any relevant activity.

At that moment, the number of members was **3**; the result of our continuous presence in many countries is to have now **14** members in that region.

In the same way, the number of academic members is now **8**.

Of course, both different categories should be increased in the incoming future.

Regarding the organization of different events, the above information shows how much this activity has been increased.

The other notable achievement, in Commission 2's opinion, is the first steps given in Africa to organize an Educational Network which could help these countries to get a much better situation from an educational point of view.

As the end of this report, Commission 2 Chair, should thank the President and members of the Council for their continuous support and advise; Markku Villikka and his team, because without them our job would be impossible in many occasions; their help and friendly atmosphere we always found there was unforgettable; Prof. Bela Markus, Chair Elect, whose continuous cooperation has been absolutely needed; Prof. Enemark, whose deep knowledge of FIG and Commission 2 has always been so fruitful, clever and gratifying; Prof. Prieto for his constant help, as Administrative Chair during these years; and, finally, all the Delegates of this Commission: without them our work would not have any sense.

Prof. Pedro J. Caverio

Chair of FIG Commission 2

July 2006

Appendices: Report: WG 2.2 - The Studies of Surveying in Latin America – Loyacono
 Geomatics Education in Sub-Saharan Africa - Report on FIG task group
 activities in Sub-Saharan Africa – Ruther
 Education in North Africa and Arabic countries - Final Report - Semlali

WG 2.2 – The Studies of Surveying in Latin America Report

Introduction

The idea of creating this Network arose during the Symposium held in Puerto Rico by the Colegio de Ingenieros y Agrimensores de Puerto Rico (CIAPR) and the Mayagüez University before the problems, similarities, lacks and needs in most of the countries in that Continent. President Foster supported and underlined the need of such a Network. Members were elected in Mayagüez, trying to represent most of the present countries.

The main goals of this Network are:

- To establish strong links among the docent Institutions in Latin America
- To facilitate the free flow and exchange of ideas, projects and people among our docent Institutions
- To facilitate the harmonization of curricula, if such is possible and necessary
- To facilitate a “common educational base”
- To facilitate mobility among professionals, teaching staff and students
- To improve the conditions of our professionals, when and where it is necessary, and increase the work possibilities of our graduates
- This Network is born with spirit of permanence; it is not only an occasional work studying the state of the art in education in this continent, but being a permanent link among professional and educational Institutions
- The final results of this first step will be given in a final report to be spread out in the regional meeting to be held in Latin America in 2005

The first meeting was held last year in Córdoba (Argentina) under the presidency of the WG 2.2 Chair, Prof. Loyácano. During this meeting it was decided the work plan, the agenda and the countries under the responsibility of every member; it was designed the questionnaire to be sent to the different Associations and Universities. There were eight members attending the meeting during three days. The Federación Argentina de Agrimensores (FADA) was represented by its President Engineer Norberto Frickx. The atmosphere, the organization and the kindness with the participants were excellent.

The second meeting was held in Costa Rica, under the umbrella of the Colegio de Ingenieros Topógrafos of this country, between 13 and 15 April this year. Members from Brasil and Uruguay could not attend the meeting, but sent information to work about.

Definition of the professional profile

According to the professional reality today and, mainly, the foreseeable tendencies and needs in the future, bearing in mind both streams of our profession, there were defined the following “Professional fields of activity” or “Professional Profile” as a desirable, suitable and necessary reality in the next future:

Specific technologies	Project, execution and management of measurement processes, modelization, representation and visualization of physic characteristics in, over and under the terrestrial surface. Project, execution and management of information systems Project, execution and management in the handling and processing of images Project, execution and management of positioning, navigation and monitoring systems
Related technologies	Project, execution and management of processes and products for civil works and building Project, execution and management of processes and products applicable to environmental, agronomic, forestry, mining, industrial and hydrographyc engineering Project, execution and management of processes and products applicable to the information society (telecommunications and informatics)
Land Administration, Rural and Urban Planning	Project, execution and management of processes and products applicable to Cadastre, Land Registry, Land Administration, drainage, expertise and valuation Project execution and management of processes and products applicable to rural and urban planning and development

Draft of curriculum

To fulfil the requirements of the professional profile, it was decided that it could be interesting for the different Governmental, University and Professional Authorities to have a draft of a common core curriculum with the subjects which, at least, should appear in the different syllabuses.

The proposed syllabus was divided into four different categories of subjects:

- Basic subjects
- Basic subjects for Engineering and Surveying
- Specific subjects for Surveying and Agrimensura
- Complementary and Humanistic subjects

After long and hard discussions it was reached an agreement about the subjects to be included in this draft. It should be said that the Working Group did not want to determine neither time for every subject nor deepness and wideness of every one, leaving for a later meeting or, better, for Universities to fix these items, according to their needs, orientation,... but, bearing in mind, that the common feeling is that “some harmonization” should appear in the curricula of the next future.

The proposed draft is available on the report on Commission 2 web site.

Number of years and hours of the proposed curriculum

According to the above professional profile, the draft of curriculum, the number of lecturing hours/week, the number of weeks/year in that Universities whose information we had, and the accepted five years, the following decision was taken:

- To propose 30 hours of lecturing / week (hours of 60 minutes)
- To propose 30 weeks / year
- The above proposals imply $30 \times 30 = 900$ hours of lecturing / year
- During five years of the proposed degree, there will be 4,500 hours of lecturing in the whole degree

Once the concept and contents of “Credit” is defined and accepted by all involved Institutions, these hours/year and hours for the whole degree will be translated into “Credits”.

Conclusions

- There is a deep conviction that today’s situation is undesirable for everybody, Professionals, Associations and Universities, mainly when the globalization process brings so many opportunities and problems.
- There is a strong wish of having some curricular harmonization which can facilitate mobility inside the continent.
- There is a big hope that this Educational Network can seriously help the different countries, Universities, Associations, Professionals, Professors and Students to a better knowledge of each other and, consequently, to facilitate the access to Graduate, Master, PhD, CPD courses inside the continent with much less problems (economic, linguistic, idiosyncratic, ...) than going outside Latin America.
- It is fully accepted that this Network should be a permanent forum for all Latin American colleagues, where make possible contacts, exchange of experiences, problems, solutions,... and reinforce the links among themselves and widen this experience to the Sister Caribbean Associations and Universities, although not Spanish speakers, as well as to the North American countries when needed and suitable.

Prof. Graciela Loyácono

Chair of WG 2.2

June 2006

Geomatics Education in Sub-Saharan Africa

Report on FIG task group activities in Sub-Saharan Africa

Introduction

At the regional FIG meeting in Marrakech in December 2003, it was decided to establish an FIG task group with the objective to create an African Geomatics Education Network. The formation of this task group was decided in a round-table discussion and is, at least partly, the response to concerns expressed in a paper by Heinz Rüther, published as FIG Article of the Month in November 2003 and titled “The Situation of Geomatics Education in Africa - an endangered profession”. Responsibility for the task group’s activities was divided between el Hassane Semlali from the Département de Géodésie et Topographie at the Institut Agronomique et Vétérinaire Hassan II - responsible for North Africa and the Arabic countries - and Heinz Rüther from Geomatics Division at the University of Cape Town -responsible for sub-Saharan Africa.

The aim of such a network was, in general terms, the promotion of Geomatics education in Africa, and more specifically for the sub-Saharan region:

- Investigation into the status of Geomatics education in sub-Saharan Africa
- Investigation into the feasibility of creating a mechanism and structure for the movement of students between institutions, especially from undergraduate to postgraduate studies
- Development of guidelines for an Africa-appropriate Geomatics syllabus
- Creation of links between staff members at Geomatics departments on the continent and specifically the formation of joint research projects involving Geomatics academics in the region.

Developments since Marrakech

A questionnaire exploring the Geomatics/Survey situation at African tertiary education institutions was designed and distributed to some 30 institutions of Geomatics education in eleven sub-Saharan countries. Unfortunately, the response was poor and only two completed questionnaires were returned. This does not necessarily indicate lack of interest or commitment but may well have been the result of unreliable internet servers or incorrect E-mail and/or physical addresses. After all, one of the reasons for the establishment of the task group was the difficulty in communication between African departments.

A positive development is the recent return of a number of African academics to their home Universities with newly awarded PhD degrees. The rapporteur is aware of three cases and at least an additional four who have submitted their PhD or are in the process of completing their research. This encouraging development can be partly attributed to the policy of some Universities which make a PhD the condition of continued employment for senior academics. This increase of academic staff with research experience is an obvious improvement, but can only really impact on the quality of Geomatics education on the continent if this expertise is employed in research project. To the rapporteur’s knowledge, only a very limited number of such project are at present in progress in sub-Saharan Africa.

An additional, albeit not entirely new, threat to two African Geomatics departments may have emerged in Zimbabwe, where according to recent reports in the “Chronicle of Higher Education” staff and students can no longer carry out their studies and work as would be desirable for an institution of higher education. If correct, this report, which cannot be confirmed by the rapporteur, would reduce the number of active Geomatics departments at Universities in South and East Africa by twenty percent.

It cannot be denied that the progress of the sub-Saharan component of the task group, if any, is disappointing. This however does not remove the need for urgent activities towards an improvement of the situation of Geomatics education in Africa, in fact it rather emphasises the need for such action. It is the opinion of the rapporteur that the situation on the continent is largely unchanged since Marrakech and that the perceived threat to the profession in sub-Saharan Africa remains significant. It is therefore suggested that the task group be continued and that concrete and tangible efforts be made to, with the support of the FIG executive, initiate activities towards an analysis and subsequent improvement of the African Geomatics education scenario. Such activities could be extended beyond the area of education to support African Geomatics practitioners in general.

Prof. Heinz Rüther

Task group co-chair

June 2006

Education in North Africa and Arabic countries

Final Report

Introduction

In December 2003, during the regional FIG meeting organised in Marrakech, there was a round table concerning the educational surveying in Africa suggested by Prof Heinz Ruther from South Africa. After long discussion it was decided to create an African Educational Network to get a whole picture about surveying & Geomatics education in Africa and Arabic countries. The network was composed of two parts: the Sub-Saharan countries chaired by Prof Heinz and the North African and Arabic countries chaired by Semlali from Morocco.

After that meeting we worked within the commission and made a work plan together with president of commission 2, some of the main goals of the work plan, as it was described in one of commission 2 reports, were:

- To get in touch with some staff from the university and professional colleagues in different countries of the network
- To get information about the educational programs, equipments, number of students, technical and professional teaching staff as well, etc.
- To know what are the needs of geomatics education, in every country, according to their situation.
- To analyze the information and make a “map at large scale” of the situation in every country.
- These maps will give us a picture of the reality, the needs, the lacks, the positive things, etc.
- Help the mobility of teachers, students, docents, ideas, problems and solutions.

First questionnaire

Next step we decided to prepare a questionnaire related to the state of the art of education in Africa and Arabic countries. I was responsible for contacting and sending questionnaire to Arabic countries and North African countries.

I have sent the questionnaire and the accompanying letter to **26** correspondents in 15 countries. These are summarised in the followings table

Country	Number of persons	Establishment
Saudi arabia	2	King Abdul Aziz Un. & King Fahd Un.
Qatar	2	Un. Of Qatar Fac. of technology & Dpt. of geography
Syria	2	Aleppo Un. & Tishreen Un.
Jordan	1	Al Balqa' Applied Un.
UAE	1	UAE Un.
Bahrain	2	Arabian Gulf Un.
Lebanon	2	American Un of Beirut & Order of Surveyors in Lebanon

Kuwait	1	Kuwait Un.
Oman	1	Sultan Kabous Un.
Egypt	4	Cairo Un.; Information Technology Institute; Training centre & Un. Of Alexandria
Tunisia	2	Un. of Tunis & Expert Geometer
Algeria	2	Centre National des techniques spatiales & Un. des sciences et de la technologie Houari Boumediène
Cameroun	2	Ordre National des Géomètres & ENSP
Kenya	1	Nairobi Central Business District Association
Benin	1	Bureau d'Etude de Topographie d'Ingénierie et d'Expertise

The situation in May 2004: At that time I had received only one answer with the questionnaire filled out from Kuwait University. I presented this situation in Athens during FIG WW2004, within commission 2 meeting.

Second questionnaire

In Athens 2004, during commission 2 meeting, it was pointed out that the questionnaire was very long, so we decided to reduce it to few questions and resent the questionnaire and the explanation letter to 25 correspondents (some correspondents from other countries as well as a reminder to the old correspondents).

The situation in April 2005 was not so encouraging; i received only 5 positive answers as shown in the table below.

The situation was discussed during commission 2 meeting and in a round table in Cairo 2005. During that FIG WW I have presented a paper about surveying engineering education in Morocco.

Country	Name, Establishment
Kuwait	Assoc.Prof.Dr.Mohamed Aziz, Cartography and GIS Geography Dept.,Kuwait University P.O.Box: 68168 Kaifan 71962 State of Kuwait Private Tel & Fax: 00965-4823881, Mobile: 00965-9546387, Work Tel: 00965-4841100 Ext. 2786 or 2776(Secr.)Kuwait Un.
Jordan	Dr. Nedal Al-Hanbali, Assistant Prof. Establisher of the Surveying and Geomatics Engineering Department GIS and School Mapping, Digital Mapping, Digital Photogrammetry, Laser Scanning, Geomatics Networks and Precise Deformation Measurements. Dept. of Geomatics and Surveying Eng. Al-Balqa' Applied University, Jordan Address:P.O.Box: 143025, Amman 11844, Jordan Tel Home: (9626) 585-7432, Mobile: 077491679 e-mail: nhanbali@index.com.jo ; nnhanbali@hotmail.com
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Benin	BAH Constantin Dlirecteur Fondateur ESIGT de Cotonou 03BP 1941 Carré 661 parcelle "i" Jéricho COTONOU BENIN Téléfax: 00(229) 32 08 64 Email: bah_constantin@yahoo.fr
Tunisia (promised to respond !)	Noamen REBAI > e-mail: noamenrebai@yahoo.com

Conclusion

The picture about the situation of education in Africa is still very astonishing, here is some important remark points:

- Some countries do have specific geomatics education program (mainly the Golf countries, few north African countries)
- Many countries do not have any specific surveying education program
- If any program exists the quality of education is poor because of a great lack of facilities (technical equipment, professional staff, experience,)

Suggestions

Below I have some specific suggestions in for the success of the network:

- Design one common flexible syllabus for countries with poor educational program.
- Create two centres of excellence, candidates might be South Africa for Anglophone countries and Morocco for Francophone countries
- Prepare a common continuing education program
- Exchange professors and students between countries of the network
- Create a web page for the Network
- Contact international organizations and inform them about the situation of the network
- Search funding from these institutions in order to realize the network ambitions
- Design a database for the network in order to vacillate transfer of information between countries of the network

Prof. El Hassane SEMLALI

June 2006