

The “Minimal Surveying Curricula” – A Step towards Standardisation of Surveyor’s Education in Poland

Prof. Kazimierz CZARNECKI, Poland

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ABSTRACT

According to the Polish regulation a body consisting of deans of the surveying faculties should meet every six years and propose a contents of so called “Minimal Surveying Curricula”. The proposal is then discussed by the councils of all surveying faculties in the country and eventually is corrected and submitted for final approval by the Ministry of National Education. The objective of such “Curricula” is to provide the surveying faculties with the set of generally formulated topics and numbers of teaching hours for particular topics that obligatory are to be included to the surveying curricula of each faculty. The “Minimal Curricula” concerns ca. 50% of the total number of teaching hours. Detailed curricula of a faculty may comprise bigger number of teaching hours as well as additional subjects. Thematic contents and numbers of teaching hours of the “Minimal Curricula” is compulsory for professional recognition of graduates as surveyors with academic qualification while applying for surveying licence. Paper discusses “Curricula” contents, objectives and experiences.

CONTACT

Prof. Kazimierz Czarnecki
Affiliation: Association of Polish Surveyors
Warsaw University of Technology
Institute of Geodesy and Geodetic Astronomy,
Plac Politechniki 1
00-661 Warsaw
POLAND
Tel. + 48 22 622 85 15,
Fax + 48 22 621 00 52
E-mail: kcz @ gik.pw.edu.pl

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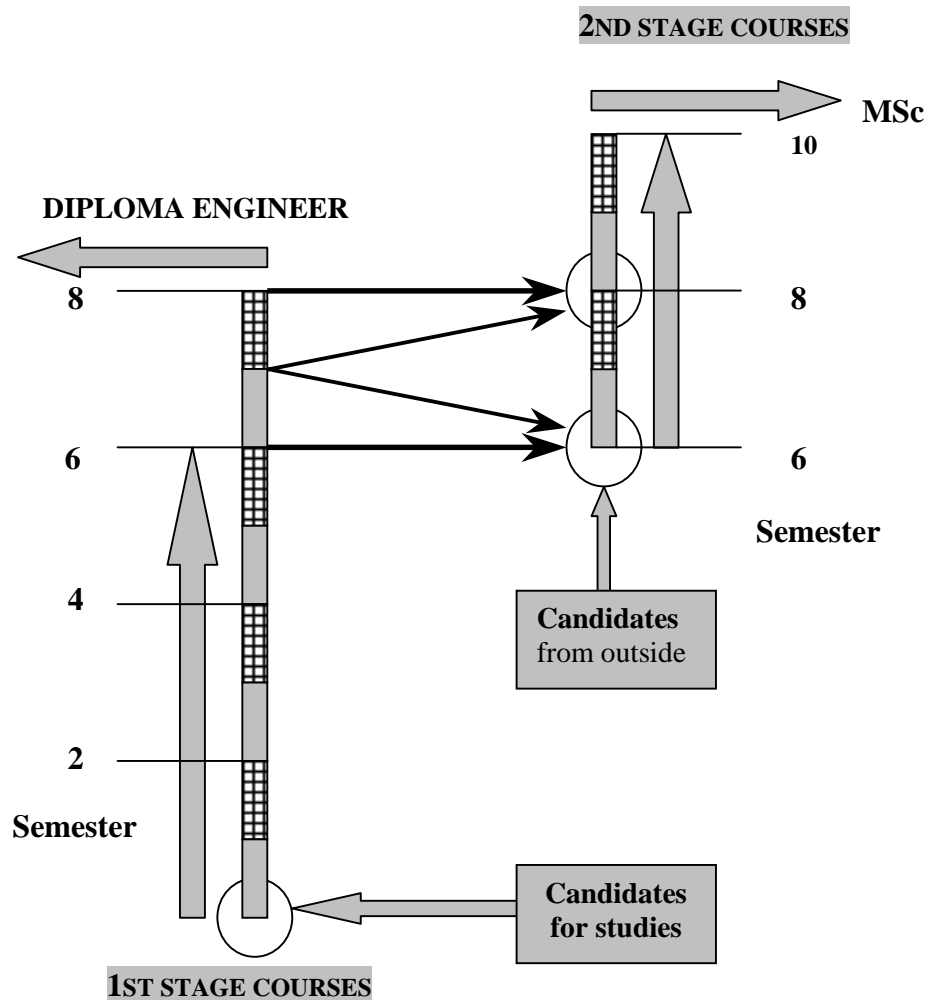
1. INTRODUCTION

Present-day systems of surveying MSc. studies (lasting 10 semesters) and Diploma Engineering studies (8 semesters) were established at the Warsaw University of Technology in eighties and nineties. There is an urgent need to reform the system. It arises from the demands of both, the professional practice and the changing economic environment bringing the pressure for international opening enabling students visiting foreign universities for the studies. Such premises created the concept of ‘the elastic curriculum’ in surveying (geodesy) at the Warsaw University of Technology. The paper refers to the problem of so called ‘minimal curricula’ what could be considered as a step towards standardisation of surveyors’ education in different universities in Poland. Significance of the problem is clear in the context of surveying professional licensing in Poland.

2. THE CONCEPT OF SO-CALLED ‘ELASTIC’ SYSTEM OF STUDIES IN SURVEYING

THE PRESENT STATE. The present curricula of surveying studies at the Warsaw University of Technology links tradition of teaching surveying at this University¹ with modernization attempts undertaken several times. The frame of the 10-semester lasted MSc courses was established in eighties of the past century; 8-semester engineering diploma courses in nineties. MSc courses comprises 7-semester common for all students and are following by two semesters of specialization. The 10th semester is devoted to optional subjects, diploma seminar and diploma thesis. Students of engineering diploma courses attend 4 common semesters followed by 3 semesters of specializations and one semester devoted to diploma seminar and diploma project. MSc courses meet condition of so-called ‘minimal curricula’ being the subject of the paper. There is a system of separate students enrolment for each course.

¹ Warsaw University of Technology was established in 1826 and it is the second oldest technical university in Europe.



Graph 1. The scheme of 'elastic' study system

THE CONCEPT OF 'ELASTIC' SYSTEM OF STUDIES. The system comprises three levels/stages of the studies:

- 1) 8-semester engineering diploma courses,
- 2) 10-semester MSc courses,
- 3) 3 or 4 years post-graduate PhD studies.

The concept is based on the following assumptions:

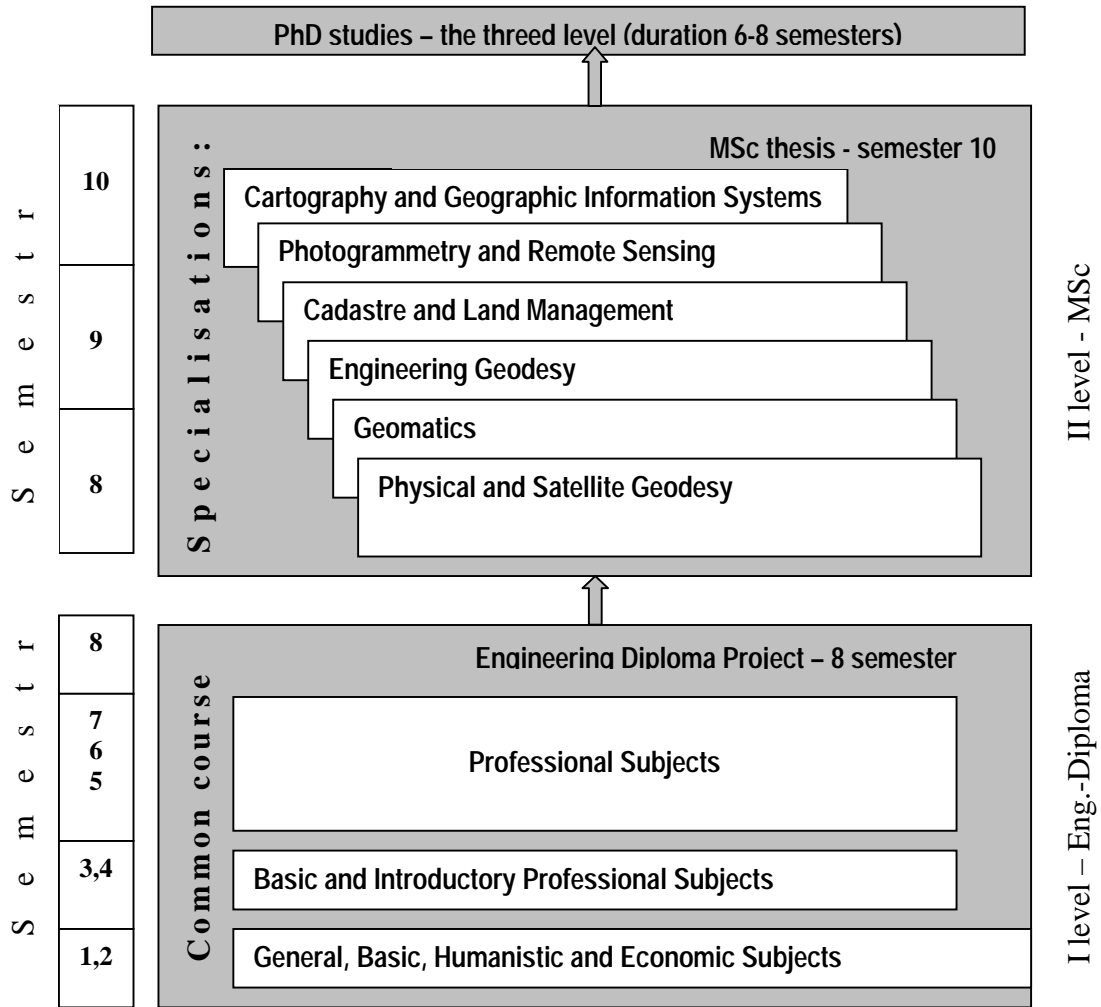
- enabling students the choice the content, form, rate and duration of studies appropriately to their individual capabilities,
- creating the environment for mastering in broad basic knowledge and developing habit of continuing learning,
- making the study system comparable with those of leading European universities.

It is assumed that the system should enable students multi-variant switching between two first stages of studies. It is also allowed that the Council of the Faculty could decide either *series* system or *series-parallel* system of studies. The first rely on the necessity of engineering graduation to start MSc courses; the second student to switch to MSc courses both completing 6th or 7-th semester and also as engineering-diploma holder. The Council of The Warsaw University of Technology Faculty of Geodesy and Cartography has decided the second *series-parallel* system. The system is illustrated in graph 1. General organisation scheme of the courses is displayed in graph 2.

3. THE ‘MINIMAL CURRICULA’

So-called ‘minimal curricula’ for MSc courses for surveyors in Poland was developed in seventies of past century and corrected several times in eighties and nineties. The latest version was constructed and adopted by the body of deans of surveying faculties in 1993. Later on improving of the ‘minimal curricula’ has been neglected. The courses different than MSc, introduced in nineties have not been standardised. Some of younger academics are willing rather non-limited freedom in developing the curricula for surveyors. Creating new private schools of surveying in Poland during last decade, often without proper staff and equipment resources has caused comeback to the idea of the ‘minimal curricula’ as a tool for quality assurance of surveying education in Poland. The system of accreditation of academic institutions, being recently developed in Poland, is rather oriented towards general assessment of academic qualities of the universities and faculties. Association of Polish Surveyors is the body vitally interested in educational quality assurance system appreciating its importance for the quality of the profession. Association postulates to establish strict connection between quality of education and the system of professional licensing. The system of professional licensing should be based on the clear criteria as referred to the academic education standards. Being apart from more or less voluntary judgments, the ‘minimal curricula’ seems to be an useful tool for such standardisation.

It was assumed, during the works on ‘minimal curricula’, that the weekly burden of the student amounts to 24 lecturing hours (lectures/laboratories). The average total in the country during the 10-semester MSc studies amounts to 3 600 hours.



Graph 2. General study organisation scheme

‘Minimal curricula’ concerns only 50% of this total. Consequently each faculty has another 1 800 hours for creating its individual, specific curricula, which can vary from one faculty to another.

THE SUBJECT		# OF HOURS
General subjects	Social sciences	180
	Languages	
	Gym	
Przedmioty podstawowe	Mathematics	240
	Physics	75
	Descriptive geometry	45
	Sub-total	360

Professional subjects	Surveying	240
	Geodesy and geodetic astronomy	120
	Satellite geodesy	30
	Theory of adjustment	90
	Computer science	105
	Photogrammetry and remote sensing	120
	Cartography	75
	Electronic and surveying instrumentation	45
	Land management	105
	Land information systems	135
	Natural sciences	75
	Environment protection	45
	Law	75
	Sub-total	

Field trainings	Surveying	6 weeks
	Geodesy and geodetic astronomy	2 weeks
	Photogrammetry and remote sensing	2 weeks
	Sub-total	

The following frame assumption has been adopted: every faculty should devote for professional subjects 540 hours as a minimum, but 900 hours as a maximum. Field trainings should not be included to the total number of hours, but field-training duration devoted to the three above mentioned subjects can not be shorter than 10 weeks. Documentation of the ‘minimal curricula’ comprises the list of topics of particular subject.

We are convinced in Poland that the ‘minimal curricula’ represents the step towards standardisation of studies in the five faculties of surveying in the country as a clear criterion of recognition of academic education. Listing of subjects and numbers of hours presented above are proposed to be recognised as an example illustrating the concept.

There is a need of further attempts at updating and improving such curricula. Sustained effort of academic institutions, professional associations and surveying administration is necessary to make the curricula successful.

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BIOGRAPHICAL NOTES

Kazimierz Czarnecki - Professor of the Warsaw University of Technology and of the Military University of Technology. He is the author of dozens publications and papers presented to the international symposia. His main interests focus on geodesy and geodynamics. He is the author of the 488-pages-text-book on geodesy. He was elected as the President of the Association of Polish Surveyors first for two successive terms of office (1983-86, 1986-89), then for another two terms (1998-2001, 2001-04). He is the member of the Committee for Geodesy of the Polish Academy of Sciences. He was active in International Federation of Surveyors (FIG) as the Chairman of FIG Commission 2 “Professional Education and Literature” (1988-91). He is the Chairman of the Working Group on “University Education Standards” of the Section C ‘Geodesy’ of the Central European Initiative (CEI) and he is also Co-Chairman of the Working Group on the Regional Geodynamics of Tatra Mts. Area (CEI CERGOP-2 Project).