STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Aleksandro Stulginskio universiteto ŽEMĖS ŪKIO MECHANIKOS INŽINERIJOS PROGRAMOS (621H30002) VERTINIMO IŠVADOS

EVALUATION REPORT OF AGRICULTURAL MECHANICAL ENGINEERING (621H30002) STUDY PROGRAMME

at Aleksandras Stulginskis University

Grupės vadovas: Team leader:	Dr. Joerg Longmuss
Grupės nariai: Team members:	prof. dr. Jukka Ahokas prof. dr. Franco Bernelli assoc. prof. dr. Sergey Shaposhnikov assoc. prof. dr. Kazimieras Juzėnas Martynas Ubartas

Išvados parengtos anglų kalba
Report language - English

Vilnius
2012

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	***Žemės ūkio mechanikos inžinerija***
Valstybinis kodas	621H30002
Studijų sritis	technologijos mokslai
Studijų kryptis	mechanikos inžinerija
Studijų programos rūšis	universitetinės studijos
Studijų pakopa	antroji
Studijų forma (trukmė metais)	nuolatinės (2), ištęstinės (3)
Studijų programos apimtis kreditais	120 ETCS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Mechanikos inžinerijos bakalauras
Studijų programos įregistravimo data	1997-05-16 ISAK Nr.565

INFORMATION ON ASSESSED STUDY PROGRAMME

Name of the study programme	***Agricultural Mechanical Engineering***
State code	621H30002
Study area	technological sciences
Study field	mechanical engineering
Kind of the study programme	university studies
Level of studies	second cycle
Study mode (length in years)	full time (2), part time (3)
Scope of the study programme in credits	120 ETCS
Degree and (or) professional qualifications awarded	master of Mechanical Engineering
Date of registration of the study programme	1997-05-16 ISAK Nr.565

CONTENTS

I. INTRODUCTION

Aleksandras Stulginskis University is a state institution of higher education and research, which is distinguished by its unique mission from other Lithuanian institutions. Its mission is directly related to agricultural manufacturing, agricultural machinery design and assurance of its reliability, sparing use of natural resources and a significant role in modernizing agricultural machinery. Four faculties are engaged in the study programme of Agricultural Mechanical Engineering, the main being the Faculty of Agricultural Engineering.

The graduates of the study programme are employed in various institutions ranging from ministries to universities, from large-scale companies to private farms. The aim of the study programme is to develop the general expertise, fundamental knowledge and abilities in the field of mechanical engineering and related study areas, essential for the solution of sophisticated problems incurred in professional activity and/or studies as well as innovative approach to working in agriculture and related spheres.

The programme has been running since 1993. The previous external evaluation took place in 2008. In the previous evaluation the following conclusions were given:

- *The main goal of the study programme is to train a specialist for the design and maintenance of mechanisms; The formulation of the sub-goals and objectives is the same; Having analyzed study programmes of the first and second cycle, it appears that undergraduate students have more extensive professional possibilities than graduate students. E.g. Master degree students are not trained for pedagogical or scientific work.*
- *Referrring to the preferences of graduates, employers, etc. it is proposed to allot more attention to practical research in Master's papers rather than focus on theoretical investigations.*
- *It is essential: To train universal specialists of mechanical engineering by establishing a system of specializations; To expand the base for laboratory work and prepare descriptions of works; To strengthen the base for scientific research.*
- *Having analyzed the studies of the first and second cycles, experts concluded: The aims of the first and second cycle studies should be specified; The material base for studies and laboratory work is too poor to conduct extensive scietific research by both teachers and students, which inhibits the education of young teachers (doctors); The possibilities of laboratories are not fully exhausted (in terms of methods and organization).*

The received assessment is positive. It is proposed that the graduate study programme should receive unconditional accreditation.

The faculty has analyzed the results of 2008 self-assessment and accreditation and three study programmes in the field of mechanical engineering were withdrawn: Agricultural Engineering and Management, Manufacturing Engineering of Agricultural Products and Engineering of Storage and Processing of Agricultural Products; the study places have been allocated to the study programme of Agricultural Mechanical Engineering. The program has at the moment elective study subjects: Mechanical Engineering, Transport and Power Machinery, Agricultural Machinery Engineering, Engineering of Production and Storage Stationary Technologies. It is felt that after the study reform the motivation of the students has increased considerably.

The visit to Aleksandras Stulginskis University was arranged 22. February 2012. The evaluation programme included discussions with administrative staff, with staff responsible for preparation of self-evaluation reports, with teaching staff and graduates and employers. The

evaluation group also had observation of various support services (studios, teaching spaces, workshops, library, computer services, etc.).

II. PROGRAMME ANALYSIS

1. Programme aims and learning outcomes

The programme aims and learning outcomes are well defined and clear and they are publicly accessible. They are based on professional requirements and the needs of agriculture and to that related administration, manufacturing and trade. The program corresponds to the similar European programs. The employers are pleased with the knowledge of graduates, they know beside the engineering also agricultural applications where the machinery is used. The self evaluation report however misses information, where the numbers of graduates working in companies and organizations, transport and/or administering agricultural machinery and transport are presented. This information can be seen however in the Bachelor programme's self-assessment report. The table is misleading because it includes all the graduated since the beginning of the programme almost 70 years ago. These figures do not give in this way presented the right picture of at the moment employed graduates. According to employers, recent graduates, students and teachers opinion the programme's name, expected learning outcomes and the final qualification are compatible with each other.

2. Curriculum design

The curriculum design meets legal requirements and the needs of employers and scientific education. As stated in the requirements for second cycle study programmes, set by the Ministry of Education and Science of the Republic of Lithuania, the total volume of the programme is 120 ECTS, out of them more than 60 ECTS is dedicated for study field subjects, out of which 30 ECTS comprises of elective subjects. 30 ECTS is given to master thesis plus 30 ECTS for the preparation of the thesis, which is totally 60 ECTS. The number of subjects per semester does not exceed 5. The programme deepens the bachelor programme knowledge. There are new subjects such as Measuring Techniques, Mathematical Statistics and Modelling and Methodology of Research Work, which are essential in scientific work.

There are quite a high number of courses with the same subject as in bachelor studies. The programme should be careful in the contents of these courses so that proper division is made according to aims of each programme without repetition of the subject contents.

Study subjects and/or modules are spread evenly, their themes are not repetitive and the content and methods of the subjects/modules are appropriate for the achievement of the intended learning outcomes and there is a good choice of electives at semesters 2 and 3. The scope of the programme ensures achievement of the expected learning outcomes and the programmes includes also the latest technology and science.

3. Teaching staff

The teaching staff meets the legal requirements and their qualifications are adequate to ensure learning outcomes. All teachers hold a scientific degree, more than 20 percent of the staff are professors. The number of teaching staff is high enough, 22 teachers, 5 professors and 17 associate professors. The teaching staff average age is quite high but the university has PhD students and the future staff is ensured. PhD education is done together with the Kaunas Technical University and the PhD students should also include foreign studies/exchange into their programme.

The teaching staff is involved in research work and according to the self evaluation report they state that "*In the academic years 2007/2008 – 2010/2011 the average of published articles*

is 24 per one teacher: 2.8 in the ISI WOS (International Science Institute Web of Science) editions, 3.5 – in other ISI (Proceedings) editions, 3.1. – are published in international scientific data bases, 8.4 – in other scientific editions, 6.3 – in popular science editions." This means 6 scientific articles per person per year, which seems to be overestimated or the numbers include many articles with several authors from the same institute.

The teaching staff is involved in scientific research projects, and the number of projects, also at an international level, carried out at the department is quite impressive. Teaching staff exchange with foreign universities is low and this should be promoted by the university. The university has several Erasmus agreements and these as well as international research projects could be used more for the exchange.

4. Facilities and learning resources

The university had large improvements done and some of them were going on. The premises were renovated and new laboratories with good instrumentation were established. The facilitites are in general of high level and in the future they will assure good scientific work and laboratory excersises and research partiticipation for students. It is to be expected that in the future peer reviewed scientific articles could be prepared more in international scientific journals.

Computer class rooms and programmes are up to date for studies. Master studies could benefit from mathematical and statistical computer programmes, such as Matlab, Simulink, SPSS etc.

The department has good connections to employers and parts of the laboratories are sponsored by them. The department also can with its contacts to companies offer places for practice.

Teaching material is mainly in Lithuanian and some of them are in Russian. Part of the students can read Russian text but not all. English textbooks and materials are also available. The lecture material of teachers is in most cases available at internet. It is recommended that the university library could seek opportunities to make an agreement with the American Society of Agricultural and Biological Engineers. They offer chapters of agricultural engineering textbooks to be downloaded from their library.

5. Study process and students‘ performace assessment

The admission requirements are defined so that minimal requirements have been determined for the admission to Master degree studies of Agricultural Mechanical Engineering: only the entrants, who have completed the first cycle studies of Mechanical Engineering or other fields of Technology (Engineering) can compete provided the volume of accomplished subjects of Engineering is not less than 30 ECTS.

Study process ensures an adequate provision of the programme and the achievement of the learning outcomes. Students have good facilities for research work and in their thesis they are using these.

The university has several Erasmus agreements. However the students are not using these. Partly this is due to their financial situation. The students are normally working during the master programme studies and they are afraid of losing their job during exchange. Students are also not convinced that their language skills are adequate. They have also had a problem with the university so that not all the courses they had done abroad were accepted by the university.

The university has adequate academic and social support. The assessment system of students’ performance is clear, adequate and publicly available. Professional activities of the majority of alumni meet the providers’ expectations and are in line with the programme aims.

6. Programme management

The faculty has both long and short term strategy guiding their development. For the strategy work the whole staff should be more encoureged to take part. The program is reviewed regularly. The relevant deepening of students knowledge is ensured through elective courses which are upgraded according to the latest achievements in science and changes in the labor market. The quality management system is clear and well functioning. It is sound and systematic, effective and efficient. All information on quality assurance measures is publicly accessible. Teachers, students and employers feedback is handled correctly. Evaluation results are used in the programme improvement. In order to receive a more full scale view of the programme, its strengths and weaknesses as well as prospective improvements, commission of study programme could have more than one member (social partner) outside the university.

III. RECOMMENDATIONS

- The faculty should find ways to improve the image of agriculture mechanical engineering. For some students the image was not clear.
- Further encouragement of international components (ERASMUS, international projects etc.) in the education and research, both for teachers and students.
- The department should have better opening of the study programme for external studies, i.e. easing the recognition of courses in foreign universities at ASU
- Language courses for teachers are arranged during the high season, the faculty should be offered more courses at different times of the year for teachers
- Where possible master students should take part into international research activities
- The students should be encouraged to learn a second foreign language
- Where possible acquisition of additional scholarships, particularly from future employers
- The faculty should take care that a proper division is made in the contents of bachelor and master courses according to aims of each programme to avoid repetition.
- Administration should keep the entire faculty involved into the strategic development of faculty and course programmes
- Keeping pace with the international development will remain a challenge. Agricultural engineering is at the moment rapidly developing subject where automation, hydraulics and electronic devices are taken into use fast.

IV. SUMMARY

Programme aims and learning outcomes

Strengths: The programme is unique and it meets the demand of employers and society to their satisfaction. Students are satisfied with the study programmes and additional activities.
Weakness: In some of the courses more practical excersices could be of benefit. This includes teaching of management of CNC-machines (equipment reported to be in purchase). The image of agriculture mechanical engineering was not for some students clear.

Curriculum design

Strengths: The programme is unique and it meets the demand of employers and society to their satisfaction.
Weakness: International involvement could still be improved. The university should promote a stronger international involvement both for students and teachers, including staff exchange programmes, co-operation, joint research activities etc. The programme has four optional specialization lines. If there is a low number of students interested in one line, this line is not arranged.

Teaching staff

Strengths: The teaching staff is involved is a good number of national and international scientific projects as well as in consulting activities in their subject areas.
Weakness: The teaching staff average age is quite high but the university has PhD students and the future staff is ensured.

Facilities and learning resources

Strength: The programme has good research perspective. Partly good facilities and excellent laboratories, which will make possible high level scientific work and student practical excersicies.
Weakness: No weakness found at the moment.

Study process and students' performance assessment

Strengths: The programme pays good attention to students scientific research skills development (18 credits ECTS allocated for scientific research). The presented final works make a good impression and show a culture of presentation, implying support of students in communication.
Weakness: Low number of students participating in the international exchange programmes. This should be promoted by the university but it is also a common problem in Lithuania because the students in master programmes are working to ensure a sufficient level of living.

Programme management

Strengths: The programme management / strategy is on sound basis, the administration has a clear vision of the future. Quality management system is in good conditions and effective.
Weakness: In order to receive a more full scale view of the programme, its strengths and weaknesses as well as prospective improvements, commission of study programme could have more than one member (social partner) outside the university.

V. GENERAL ASSESSMENT

The study programme Agricultural Mechanical Engineering (state code – 621H30002) of Aleksandras Stulginskis University is given **positive** evaluation.

Study programme assessment in points by evaluation areas.

No.	Evaluation Area	Evaluation Area in Points*
1.	Programme aims and learning outcomes	4
2.	Curriculum design	3
3.	Teaching staff	3
4.	Facilities and learning resources	4
5.	Study process and students' performance assessment	3
6.	Programme management	4
	Total:	**21**

*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;
2 (satisfactory) - meets the established minimum requirements, needs improvement;
3 (good) - the field develops systematically, has distinctive features;
4 (very good) - the field is exceptionally good.

Grupės vadovas: Team leader:	Dr. Joerg Longmuss
Grupės nariai: Team members:	prof. dr. Jukka Ahokas prof. dr. Franco Bernelli assoc. prof. dr. Sergey Shaposhnikov assoc. prof. dr. Kazimieras Juzėnas Martynas Ubartas