



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Aleksandro Stulginskio universiteto
**ŽEMĖS ŪKIO INŽINERIJOS IR VADYBOS PROGRAMOS
(612H10001, 61209T111)
VERTINIMO IŠVADOS**

**EVALUATION REPORT
OF *AGRICULTURAL ENGINEERING AND
MANAGEMENT PROGRAMME (612H10001, 61209T111)*
STUDY PROGRAMME**
At Aleksandras Stulginskis University

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Išvados parengtos anglų kalba
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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Žemės ūkio inžinerija ir vadyba</i>
Valstybinis kodas	612H10001, 61209T111
Studijų sritis	technologijos mokslai
Studijų kryptis	bendroji inžinerija
Studijų programos rūšis	universitetinės studijos
Studijų pakopa	pirmoji pakopa
Studijų forma (trukmė metais)	dieninės studijos (4), iššęstinės (6)
Studijų programos apimtis kreditais	240 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	bendrosios inžinerijos bakalauras
Studijų programos įregistravimo data	1997 gegužės 16 d.

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Agricultural Engineering and Management</i>
State code	612H10001, 61209T111
Study area	Technological Sciences
Study field	General Engineering
Kind of the study programme	university studies
Cycle of studies	first
Study mode (length in years)	full time (4), part-time (6)
Scope of the study programme in credits	240 ECTS
Degree and (or) professional qualifications awarded	Bachelor of General Engineering
Date of registration of the study programme	16 May 1997

Studijų kokybės vertinimo centras
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I. INTRODUCTION

Since 1997, the Faculty of Agricultural Engineering and Management of the Aleksandras Stulginskis University has offered a Bachelors' degree in Mechanical Engineering in the study field of Agricultural Engineering and Management. In the external assessment of the study programme carried out in 1997 the Bachelor's programme received a positive evaluation. An external evaluation of several study programmes conducted in the study field of Mechanical Engineering and offered in the Faculty (including that of Agricultural Engineering and Management) was carried out in 2008 by a group of experts. While the expert group recommended that the study programme be granted unconditional accreditation, the Council of Study Assessment Experts (SKVC, Order No. 4-994 of April 6 2009) did not approve of the conclusions of the expert group and the study programme received conditional accreditation for 3 years. It was also recommended to the University to merge the study programmes and award a degree of bachelor of general engineering and establish specialisations.

This evaluation report is based on the self-assessment report submitted by Aleksandras Stulginskis University and a visit to the university by the Expert Group on 23rd March 2012 during which relevant facilities were inspected and discussions were held with the following groups:

- University Administration
- Self-assessment group
- Faculty and teaching staff
- Students
- Alumni and employers

The reader is also kindly asked to consult the general overview report (annex) to become acquainted with general remarks and recommendations addressed to all curricula evaluated during the visit.

II. PROGRAMME ANALYSIS

1. Programme aims and learning outcomes

The stated aim of the study programme of Agricultural Engineering and Management at the Aleksandras Stulginskis University is to provide future Bachelors with knowledge of general university education and knowledge of general engineering necessary for conducting various engineering related tasks by applying appropriate technologies in the spheres of integrated engineering, human safety and environmental engineering and management, as well as developing the graduates' abilities to apply the acquired knowledge in practical and professional activity. This aim satisfies the general requirements for Technological science studies approved by the Minister of Education and Science (ISAK-734 of April 29 2005) and conforms with international requirements. In order to achieve the aim, three sub-goals or objectives have been developed which are clearly defined and are sufficient to achieve the aim. These are as follows (self-evaluation report, item 15):

- Develop the graduates' world view, critical thinking ability, citizenship, creativity and communication and collaboration at international level.
- Develop the graduates' professional competences appropriate to a Bachelor of General Engineering by providing the graduates with knowledge of fundamental sciences, general engineering, mechanics, materials and other fields of engineering and social sciences as well as develop the graduates' ability to apply the acquired knowledge in solving technological, technical and similar problems
- Provide graduates with knowledge and abilities of business, occupational and environmental safety management that are necessary for performing functions of an engineer-manager (head of own business) in companies of technical or technological profile.

The learning outcomes of individual study subjects are described in detail and stated in clear, non-technical form which is publicly accessible, written in comprehensive language. They are well defined, clearly stating the knowledge, awareness, abilities and skills which the graduate will be expected to possess on completion of the Bachelors programme. They are based on the academic and professional competences required of a Bachelor of Engineering in the general area of mechanical engineering and they comply with the aim of the study programme. However, they are based only on the first level of Bloom's taxonomy – knowledge, skills and attitude. A table which shows a mapping of learning outcomes to individual study subjects but this table is rather simplistic. A more detailed analysis is recommended.

One of the weaknesses of the Lithuanian agriculture sector identified in the Long-term Economic Development Strategy of Lithuania until 2015 (as stated in the self evaluation report) is the insufficient knowledge and technical awareness of individuals involved this activity, their insufficient competences and preparation to work under competitive market conditions. There is also a perceived lack of experience in management and economics, and underdeveloped abilities to choose appropriate machinery, equipment and technologies. Therefore there is a real need for the Bachelors programme in Agricultural Engineering and Management to produce graduates with the appropriate technical and management knowledge and skills if the goals of the long-term economic development of Lithuania are to be achieved. Moreover, the results of annual surveys of graduates conducted from 2007-2010 showed the high level of employability of the graduates with only 2% remaining unemployed 6 months after graduation. A survey of companies in the agriculture sector showed that there is a continuing need for first cycle graduates for the foreseeable future. Therefore the production of Bachelor graduates meets both public needs and the needs of the labour market.

The programme aims and learning outcomes are consistent with the level of knowledge, awareness and skills requirements of Bachelors' degrees in general engineering internationally. They conform to the requirement for the qualification of the trained specialists established according to Level 6 in the European Qualification Framework and are based on the provisions of Dublin descriptors which state that a graduate from the first cycle of studies has to 'demonstrate and to be able to apply knowledge and understanding supported by advanced textbooks knowledge and knowledge at the forefront of the study field, to be able to collect and interpret data in the field of studies, which are necessary for finding solutions to important social and engineering problems, to substantiate suggested solutions devising and sustaining arguments, to communicating information to audiences of specialists and non-specialists, to possess skills of autonomous learning that are of relevance pursuing degree in further cycles of studies'. Participation in international programmes such as Erasmus, NOVA-BOVA and Leonardo da Vinci is designed to ensure that both students and teachers are exposed to international teaching and learning methods as well as the knowledge and skills of their peers in other countries. However the self-assessment reported that there is insufficient participation in these mobility programmes by students (confirmed by students in interviews) because of lack of sufficient study subjects in foreign languages and difficulty of students finding suitable study subjects in host institutions.

The name of the programme – Agricultural Engineering and Management – is quite clear and appropriate. The degree is awarded in the general field of engineering which is the most appropriate of the classifications approved by the Ministry of Education.

2. Curriculum design

The curriculum design meets legal requirements in all respects. The programme complies with the national legal acts and the regulations for undergraduate study programmes as shown in the self-evaluation report. The total volume of the study programme is 240 ECTS credits. The study programme consists of general university study subjects (18 ECTS credits – min 15), study subjects in the study field (173 ECTS credits – min 165) and study subjects of other study fields and

freely elective study subjects (49 ECTS credits – max 60). The volume of the Bachelor paper is 12 ECTS credits (min 8) while the total volume of practical placements is 15 ECTS credits (min 15). The study subjects are spread evenly with 30 ECTS credits per semester (FT) and 19-21 ECTS (PT) being taken. The number of subjects per semester do not exceed 7. It appears that care has been taken to ensure a logical sequence in the delivery of the study subjects, consistent with the learning outcomes without undue repetition of material although it would be expected that some revision of prior material would be appropriate in linking previously taught material to new material.

The content of the study subjects is at the level that would be expected for a Bachelors programme. A combination of lectures, tutorials, seminars and practical work is used in delivering the modules. Some of the practical work involves team work which is appropriate to achieve the learning outcomes. The scope of the individual modules and programme as a whole is sufficient to ensure the learning outcomes. The proportion of contact hours for individual study subjects varies between 53% and 60%, apart from the practical trainings and the final Bachelor paper. This proportion is fine in the early part of the programme where strongly guided learning is important to ensure a sound basic scientific foundation. However the proportion of independent learning should increase in the latter stages of the programme, particularly in the last two years to encourage students' self-reliance.

The process of internal quality assurance has been established by the Statute of ASU. This provides for an annual review of the study programme based on the model proposed by European Foundation for Quality Management as well as provisions and guidelines of quality assurance in European higher education. This has been implemented by the university since 2010 and should ensure that the content of the programme is updated annually to reflect the latest achievements in science and technology. Study subject materials are still being prepared for placement in the virtual learning environment 'Moodle'. Consultation sessions with teachers are available for all sets of students, Full Time and Part Time.

3. Staff

All the teachers on the programme meet the qualification requirements. There are 4 professors, 2 of whom teach core subjects while 2 teach specialist subjects. There are 23 associate professors (1 of whom teaches general education subjects, 20 teach study field subjects, and 2 teach alternative subjects in the main study field). There are also 3 lecturers with doctor's degree, 10 lecturers and one assistant lecturer who teach in the first circle of study programme. They are all well qualified and have requisite experience in the subjects which they teach. This satisfies the legal requirements as set out by the order of the minister of education and science. The teachers are mostly active researchers and it is reported that the volume of research is on an upward trend. This augurs well for ensuring that students are exposed to the latest research developments. However, it is noted that majority of the publications are in regional journals and local conferences. There is a need for the academic staff to engage more with the international community by attending international conferences and publishing in the top international journals in their field. The student-staff ratio is excellent at 9 to 1. The age profile of the teachers is good with a good number of younger staff. Staff turnover is insignificant and it appears that succession planning is in place to replace retiring teachers. The fact that selection of teachers is on a competitive basis should ensure that the students are taught by the best available teachers. There appears to be an active culture of scientific research in the faculty with teachers actively participating in conferences both in Lithuania and abroad as well as regularly hosting scientific conferences. The upward trend in the volume of research output and research income is very encouraging. However, as pointed out above, attendance at international scientific conferences and publication in top international journals should be encouraged.

Teachers seem to spend a high proportion of their time in pedagogical activity (between 52% and 60%, as stated in the self-evaluation report. This is because of the high proportion of contact with students. If the proportion of student self-study is increased, this will release more time for teachers to engage in research activities and improve the scientific content of the

studies. The last self-assessment review raised the issue of teachers' continuing education and professional development. It would appear that this issue has been addressed in this self-assessment. Teachers have the right and obligation to develop their professional competence through study trips and research. Opportunities are provided for human resources development implemented in the University, LLP/ERASMUS programme projects, courses of professional development, scientific discussions, scientific-practical seminars, academic readings and international scientific conferences. While these initiatives are good, it is to be noted that most of the study visits are very short (a few days only, as said in the self-evaluation report and also confirmed during the meeting with teachers) which does not allow the participant to engage in the research of the host institution. Longer visits (3 to 6 months) will allow the participant time to absorb the latest technological developments and participate in the research in host institutions to the benefit of his/her own research on return to Lithuania. Furthermore, the high proportion of time spent on pedagogical activities by all teachers, particularly the lecturers and assistant lecturers does not give enough time to develop their research.

4. Facilities and learning resources

The classrooms are adequate in both their size and quality. Stationary computer projection facilities are available in the major classrooms and mobile ones are available from the Dean's office for other classrooms. A major renovation programme of the classrooms is being carried out to bring buildings to contemporary European standards. Computer laboratories are equipped with personal computers which have most of the popular CAD and CAE software necessary for the teaching of mechanical design and analysis installed. Solid Edge is the software of choice for teaching product design and regular updates are available direct from the distributor. However, CAE facilities need to be improved greatly – one network licence for ANSYS is grossly inadequate for serious research work given the number of undergraduate and postgraduate students in the department. It is stated that further new software is to be purchased under the project 'Improvement of the First and second Cycle Study Programmes of Agricultural Profile and Teachers' Competence Development' (ŽŪ-SPDK, No. VP1-2.2-ŠMM-09-V-01-002). This project should give priority to improving the CAE facilities. One of the weaknesses pointed out by the previous self-assessment review is the lack of sufficient modern technical equipment and research facilities. It appears that since then there has been great improvement in the laboratory facilities for practical work, many of which are now equipped with quite modern facilities and equipment. However, the machine design and mechanics laboratories, in particular, still require modernising. The science, studies and business centre project 'Nemunas Valley' is also providing new laboratories and modern equipment which should provide opportunities for the teachers to engage in front-line research. However, they must engage more with international centres of excellence in the appropriate fields through visits, attendance at international conferences and publication in international journals. Practical training of students is conducted in companies, farms and institutions. Placements with such organisations are coordinated by the Careers' Centre. Discussion with teachers and students indicate that there is no problem in finding placements for students. Arrangements are also available for placement in other institutions. Library resources seems to be good with a good volume of titles and copies as well as subscription to 18 000 scientific journals accessible through 18 foreign electronic data bases in addition to printed journals. Electronic copies of theses and dissertations are available in the library and are placed in the general Lithuanian database. There is provision for books and publications unavailable in the library to be obtained through the National libraries or through inter-library loans. Textbooks and other publications are sufficient and available in the electronic database accessible to students. Some monographs have been prepared by university researchers who teach on the study programme. However, these need to be constantly updated with more modern material. Implementation of the virtual learning environment is still in the early stages.

5. Study process and student assessment

Student admission is on a competitive basis. Competition is based on scores in maturity examinations in 3 subjects related to the programme of study (Maths, Physics and Lithuanian) plus a foreign language multiplied by weighting coefficients. The students with the highest

scores are offered state financed places. Non-state financed places are available for those with lower scores.

The study process is well organised and adequate provision is provided for the students to achieve the learning outcomes. Self-study is regulated centrally by the university (not more than 50 percent). A relaxation of this regulation of the proportion of self-study for the later stages of the programme, particularly the last two years, will encourage students to develop the culture of independent learning and reduce the teaching load of teachers. Opportunities exist for students to participate in artistic activities – Choir, folk dancing, folk music etc. Support is available for socially disadvantaged students e.g. free accommodation, and scholarships.

Students are supposed to be able to participate in student mobility programmes – Erasmus, NOVA-BOVA etc. However, according to the self-evaluation report, very few students are able to avail themselves of this opportunity because of language problems and inability to find appropriate study subjects in the host universities. Some students reported that in some cases, learning agreements reached before proceeding on Erasmus were not honoured and the student had to make up the subjects missed while studying abroad. The low number of study subjects taught in foreign languages also limits the number of in-coming students. The faculty should be more supportive of students wishing to participate in mobility programmes by accepting approximate mapping of host university modules to the ASU study subjects.

The assessment of courses are based on a 10 point scale approved by the Minister for Education. Bachelor is awarded based on the cumulative score over the programme. Students are made aware of the assessment tasks and the assessment criteria at the beginning of the course. They also get guidelines for self-study work. Regular testing is carried out through interim tests. Students with poor performance are invited for individual counselling. Surveys conducted to elicit the demand for Agricultural Engineering and Management specialists and the satisfaction of employers with the skills of the graduates indicate that there is a continuing demand for graduates of the programme and that employers are satisfied with the practical abilities and communication skills of the graduates. However, they were dissatisfied with the theoretical knowledge of some graduates. This has led to a review of the programme and the introduction of study subjects to remedy this.

Admission numbers have been falling particularly for full time students – large fall in the last 2 years to only 15 students from 51 in 2007. There are demographic reasons for this but the limited number of state-funded places (voucher system) is also partly responsible because of the high cost of tuition fees (please refer to the general overview report (annex)). There is a danger that due to the falling number of students there may not be enough graduates to satisfy the employment needs of the agricultural sector of the economy in the future. It also poses a threat to sustainability of the large number of staff teaching on the programme.

6. Programme management

The faculty administration is responsible for organisation of studies and administration of students' work and their achievements including documentation of registration, timetabling of courses, records of coursework results, examinations and grades achieved, student mobility, academic achievements and final degree grades. The study programme is monitored by the study programme committee. The committee is made up of teachers on the study programme plus a student representative and a representative of the social stake holders. Programme management procedures are governed by the University Statutes. The process of administration of the study programme and internal quality assurance is provided for in the University Statute and in the Conception of University Study Quality Assurance created in 2008 and is based on the European Foundation for Quality Management. Information and data on implementation of the programme is collected through annual surveys of students and biennial survey of teachers, as stated in the self-evaluation report. The information and data are analysed and published. The data collected is very comprehensive. Many changes were made to improve the study programme following the recommendations of the last internal evaluation. According to employers' opinion, referred in the self-evaluation report, the changes in the study programme in terms of applied engineering,

environment, safety and business management are timely and appropriate. This was confirmed during the meeting with graduates and employers. However they would like more students to gain experience with companies working in occupational safety.

Regular internal reviews also help to renew the programme. Students and social stakeholders are represented on study programme committee as well as on internal and external reviews. However, the huge workload of the Committee members in the study process leaves little time for direct improvement of study quality and this is seen as a hindrance to improving programme quality and efficiency. Therefore it is felt that the efficiency and effectiveness of the internal quality assurance measures could be improved by reducing the workload of the teachers.

III. RECOMMENDATIONS

3.1. The proportion of student independent learning should be increased in the latter stages of the programme, particularly in the last two years to encourage students' self-reliance.

3.2. The proportion of teacher's time spent in pedagogical activity should be reduced to release more time for teachers to engage in research activities and improve the scientific content of the study subjects.

3.3. Provision should be made for teachers to make longer international visits (3 to 6 months) which will allow the participant time to absorb the latest technological developments and participate in the research in host institutions to the benefit of their own research on return to Lithuania.

3.4. Academic staff should engage more with the international community by attending international conferences and publishing in the top international journals in their field.

3.5. More students should be encouraged to participate in international mobility programmes by expanding the range of optional subjects, making it easier for them to find appropriate study subjects in host institutions.

3.6. The number of study subjects taught in foreign languages should be increased to encourage the number of in-coming international students.

3.7. CAE facilities (hardware and software) should be greatly improved. It is stated that further new software is to be purchased under the project 'Improvement of the First and second Cycle Study Programmes of Agricultural Profile and Teachers' Competence Development' (ŽŪ-SPDK', No. VP1-2.2-ŠMM-09-V-01-002). This project should give priority to improving the CAE facilities.

3.8. A strategy should be devised to arrest the decline in the number of students admitted to the programme including, increasing the number of state-funded places.

IV. SUMMARY

1. Programme aims and learning outcomes

Strengths:

The study programme addresses a real on-going need of providing manpower to fill vacancies in companies in the agricultural sector of the Lithuanian economy. Therefore graduates are very likely to find employment.

The programme aims to produce graduates who are multi-skilled, possessing both engineering and management skills. This particular combination of skills is a great advantage when working for small companies which make up a large percentage of the Lithuanian agricultural sector. These companies are unlikely to be able to employ a specialist in business and environmental management in addition to a specialist engineer. The skills set also means that graduates have a wide range of employment opportunities.

The learning outcomes are based on the Dublin descriptors thus ensuring that the graduates of the programme receive training of an international standard. Opportunities are available for participation of students and teachers in international mobility programmes such as Erasmus, NOVA-BOVA etc. with a view to reinforcing the international purview of the study programme.

Weaknesses

Insufficient participation of students in international mobility programmes

2. Curriculum design

Strengths

The curriculum meets all legal requirements

Study subjects are spread evenly over the programme and a logical sequence in their delivery consistent with their delivery is apparent.

Process of internal quality assurance has been implemented.

Weaknesses

The proportion of contact hours in individual study subjects is quite high (53 to 60 percent) resulting in high teaching loads for teachers.

3. Staff

Strengths

All teachers are generally well qualified and sufficiently experienced and meet the qualification requirements.

There is an upward trend in research income as well as the volume of research output with active participation in conferences and organisation of conferences.

Teachers have the right and obligation to develop their professional competence through study trips and research and opportunities provided for human resources development implemented in the university.

Weaknesses

Teachers spend too high a proportion of their time in pedagogical activity leaving insufficient time for research.

Most study visits are very short and insufficient for teachers to engage in the research of the host institution and absorb the latest technological developments in their field.

Insufficient participation in international conferences and publication in top international journals.

4. Facilities and learning resources

Strengths

Major renovation of classrooms.

Weaknesses

Insufficient CAD/CAE facilities for teaching and research.

Incomplete implementation of the virtual learning environment (Moodle)

5. Study process and student assessment

Strengths

Admission based on competition.

Best students get state financed places.

Scholarships for exceptional academic performance

Help available for socially disadvantaged students

Weaknesses

Falling number of students

Voucher system limiting number of state-financed places.

Low take-up of mobility programmes

6. Programme management

Strengths

Structures for programme management are in place

A huge amount of data is gathered and analysed and made available to stakeholders
All stakeholders (teachers, students, social stakeholders) are represented on programme evaluation panels and regular surveys of student and teachers are held.
Opinion of employers are sought on changes to the study programme.

Weaknesses

Lack of efficiency in improvement of study quality due to huge workload of teachers.

V. GENERAL ASSESSMENT

The study programme *Agricultural Engineering and Management* (state code – 612H10001, 61209T111) 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	3
2.	Curriculum design	4
3.	Teaching staff	3
4.	Facilities and learning resources	3
5.	Study process and students' performance assessment	3
6.	Programme management	3
	Total:	19

*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.

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