

Support to strengthening the higher education system in Azerbaijan



Twinning project ENI/2018/395-401

Mission Report

Short-Term Mission on Activity 1.5. Provide recommendations for improvement of education standards for qualification for programmes in the priority areas (incl. legislative arrangements) with a view to describing achievements based on competences and skills, considering the AzQF

(October 14 - 18, 2019)

1. Name and Function of the Expert:

Full name of expert

Mr. Aigars Vītols, Latvia

Signature



Aigars Vītols

2. Objective and Tasks of the Mission:

The mission is carried out within the framework of:

COMPONENT 1: SELECTED NATIONAL EDUCATION STANDARDS ARE ALIGNED TO INCLUDE A COMPETENCE-BASED FOCUS

Activity 1.5. Provide recommendations for improvement of education standards for qualification for programmes in the priority areas (incl. legislative arrangements) with a view to describing achievements based on competences and skills, considering the AzQF

Benchmarks for this activity are:

- **State standard for selected study programmes (Electrical engineering) are revised, with a view to describing achievements based on competences and learning outcomes, considering AzQF;**
- **Other relevant documents/ methodology materials are prepared.**

3. Time schedule of the mission:

Date and Time	Activity
Monday, 14 th of October 2019	<p>Meeting with RTA Ms. Elizaveta Bydanova and Ms. Vusala Gurbanova, Component Leader I, Senior Advisor at Higher Education Department, Ministry of Education.</p> <p>Discussions on the working tasks during the mission, the form of the deliverables. Discussion about current situation and the expected recommendations.</p>
Tuesday, 15 th of October 2019	<p>Meeting with the representatives from the Sumgayit State University, Azerbaijan State Oil and Industry University, Azerbaijan Technical University and Ms. Elizaveta Bydanova in the Ministry of Education.</p> <p>Meeting in the Azerbaijan Technical University with dean of faculty of Electrotechnics and energetics prof. Mr.Hikmat Alyev. Discussions about teaching processes in laboratories. Observation of technical condition of laboratories.</p>
Wednesday, 16 th of October 2019	<p>Meeting in the Azerbaijan State Oil and Industry University with dean of faculty of Electrotechnics and energetics prof. Elbrus. Discussions about teaching processes in laboratories. Observation of technical condition of laboratories. Meetings also with managers of laboratories and some subject teachers like fundamentals of electrical engineer teacher. Observation of high voltage laboratories.</p>
Thursday, 17 th of October 2019	<p>Deskwork on analysis of state standard of higher education for electrical engineering program and recommendations for the new standard.</p>
Friday, 18 th of October 2019	<p>Meeting in the Ministry of Education. Final discussion on the results of the meetings during the mission. Presentation of the recommendations for further improvement of the standards HEI and activities for the implementation of the standard relevant for the Twinning project.</p>

4. Relevant Background Information/State of Affairs regarding the mission

1. Classification of Bachelor and Master level programs in Azerbaijan
2. Standards of Bachelor level Chemistry Teacher, in Physics, Geography etc.
3. New Standards of higher education of Bachelor level Chemistry Teacher, in Physics, Geography etc. elaborated within the TWINNING project
4. Information about Universities offering chemistry education in Azerbaijan
5. Decree of the Cabinet of Ministers “On the approval of the ‘National Qualifications Framework for Lifelong Learning of the Republic of Azerbaijan’”
6. Standards of higher education of Master level

5. Achievement of the Expected Results

Planned action was achieved.

As the main achievement of the visit can be considered the elaborated suggestions for development of state standard of higher education study program of bachelor level in electrical engineering considering AzQF. Considering that the AzQF is conceptually developed in compliance with the criteria of the Qualifications Framework of the European Higher Education Area (QF-EHEA) and the European Qualifications Framework for Lifelong Learning (EQF) (Decision 311 of cabinet of ministers Baku July 18) also International Standard classification of Education 2011 ISCED-2011, European Qualifications Framework EQF and Regulations on the classification of education in Latvia were taken into account during elaboration of suggestions.

6. Unexpected Results

No unexpected results were obtained during the mission

7. Issues Left Open After the Mission

All planned issues were done during the mission

8. Recommendations (including recommendation for future missions)

1. The title in English language of specialty in state standard of higher education program is suggested to be changed into Electrical engineering or Electrical and Electronics Engineering.
2. Chapter 2 of the new framework for state standard is suggested to be written considering description of 6th level of qualification in European Qualification Framework see Table 1. There also was discovered that Descriptions of level 6th in the National Qualifications Framework for Lifelong Learning of the Republic of Azerbaijan which can be find in

Decision 311 of cabinet of ministers Baku July 18 do not consider to description of 6th level of qualification in European Qualification Framework see table 1 and before mentioned decision 311.

Table 1.

	Knowledge	Skills	Responsibility and autonomy
	In the context of EQF, knowledge is described as theoretical and/or factual.	In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).	In the context of the EQF responsibility and autonomy is described as the ability of the learner to apply knowledge and skills autonomously and with responsibility
Level 6[2] The learning outcomes relevant to Level 6 are	Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study	Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups

3. Chapters 3.1, 3.2 and 3.3 are suggested to be aligned according to the Table 2. It is recommended that subjects, subjects' topics, learning outcomes, competencies and ECTS credits are agreed between the study programme teaching staff of all universities, who offer this programme.

Table 2.

Title of subject	Structure of subject.	Learning outcomes	Competences	ECTS
1.Fundamentals of electrical engineering theory	1. Elements of electric circuits. 2. Ideal voltage source 3.Ideal current source 4.Ohm`s law 5. Introduction of nodes, branches, and loops. 6.	1.Understanding of basic elements of DC circuits. 2.Understanding of topology of electrical circuits. 3. 4. . .		9
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4. Additional information.

After some visits to pilot universities of the project, the following **weaknesses and shortcomings were identified:**

1. There are too many students per one teacher, which impairs knowledge transfer from teacher to student;
2. In some laboratories there is only one laboratory place for the whole group;
3. Most laboratories are totally outdated from the aesthetical point of view;
4. It is also **very important to mention** that in the high voltage laboratories there are also too many students per one teacher. In these high voltage laboratories (more than 380 volts) training processes are very dangerous. Therefore, it shall be stated in the state standard that there shall be a maximum of 3 to 5 students in laboratory during practical work in order to provide safe learning process.

Suggestions:

1. The lab descriptions should be reviewed to make sure they are written in a clear and easily understandable way for the students;
2. It should be considered to reform the current 2-tier system of degrees in doctoral studies into 1-tier system, as per the practices in EU countries.

Positive opinions:

1. Although lab workshops are aesthetically outdated, they still provide quite satisfactory basis for practical exercises as all of the equipment is still functional;
2. The content of bachelor program generally corresponds to EQF.

9. Acknowledgments (if any)

The expert expresses gratitude to representatives of universities' staff for openness during universities visits. I acknowledge the support during the organisation of the visit as well as during meetings of Elizaveta Bydanova.

10. Used documents

International Standard Classification of Education, 2011:

https://ec.europa.eu/eurostat/ramon/other_documents/isced_2011/index.cfm?TargetUrl=DSP_ISCED_2011

REPUBLIC OF AZERBAIJAN CABINET OF MINISTERS D E C I S I O N No 311 Baku, July 18, 2018

Descriptors defining levels in the European Qualifications Framework EQF:

<https://ec.europa.eu/ploteus/content/descriptors-page>

Regulations on the classification of education in Latvia :

<https://likumi.lv/doc.php?id=291524>

11. Curricula of similar study programs in European HEIs:

11.1.

3-year Bachelor Degree 'INDUSTRIAL ENGINEERING & MANAGEMENT' at Jacobs University (Germany)

Year 1

The first study year is characterized by a broad offer in disciplinary education that builds on and extends the students' entrance qualification. IEM Students select introductory modules with a total of 45 CP from the CHOICE area of a variety of study programs, of which 30 CP will be from their intended major.

Students can still change to another major at the beginning of the second year of studies if they have taken the corresponding modules of the study program in the first year of studies.

IEM students take the following CHOICE modules:

- CHOICE Module: General Industrial Engineering (7.5 CP)
- CHOICE Module: General Logistics (7.5 CP)
- CHOICE Module: Introduction to International Business (7.5 CP)
- CHOICE Module: Introduction to Finance and Accounting (7.5 CP)

Thus, students will learn the fundamentals of industrial engineering, industrial management, manufacturing technology, logistics systems and supply chains as well as the important business functions in the globalized world.

Year 2

In their second year, students take modules with a total of 45 CP from in-depth, discipline-specific CORE modules. These modules aim to extend the students' critical understanding of the key theories, principles, and methods in their major at the current state of knowledge and best practice.

IEM students take 45 CP from the following CORE modules:

1) "Advanced Industrial Engineering", consisting of the modules:

- CORE Module: Production Planning & Control (5 CP)
- CORE Module: Product & Production System Design (5 CP)
- CORE Module: Process Modelling & Simulation (5 CP)

This unit takes an in-depth look into production systems, providing the students with understanding product development and design activities, production planning and control methods, as well as modeling and simulation of the entire manufacturing processes.

2) "Advanced Industrial Management", consisting of the modules:

- CORE Module: Operations Research (5 CP)
- CORE Module: Lean Supply Management (5 CP)
- CORE Module: Production & Technology Management (5 CP)

In this unit, students will learn to model decision making problems, to develop purchasing strategies, to employ advanced lean methods for the elimination of waste in industrial processes, as well as to manage innovation and technologies.

3) "Project & Strategic Management", consisting of the modules:

- CORE Module: Applied Project Management (7.5 CP)
- CORE Module: International Strategic Management (7.5 CP)

This unit prepares students to set up, organize, manage and control projects as well as to evaluate and design strategies in international management.

Year 3

During their third year, students prepare and make decisions for their career after graduation. To explore available choices fitting individual interests, and to gain professional experience, students take a mandatory summer internship.

The 5th semester opens also a mobility window for ample study abroad options. Finally, the 6th semester is dedicated to fostering the research experience of students by involving them in an extended Bachelor thesis project.

IEM students take 15 CP of major-specific and major-related Specialization modules to consolidate their knowledge at the current state of research in areas of their choice.

IEM students choose 15 CP of the following Specialization Modules:

- Specialization: Industry 4.0 and Blockchain Technologies (5 CP)
- Specialization: Advanced Product Design (5 CP)
- Specialization: Supply Chain Design (2.5 CP)
- Specialization: Integrated Decision Making in Supply Chain Management (2.5 CP)
- Specialization: Distribution & E-Commerce (2.5 CP)
- Specialization: Law of Transportation, Forwarding and Logistics (2.5 CP)

For more information: <https://www.jacobs-university.de/study/undergraduate/programs/industrial-engineering-management>

11.2.

BSc in Industrial Engineering & Management Science

www.rug.nl/bachelors/industrial-engineering-management

36 months (180 ECTS)

University of Groningen Netherlands

Year 1

Semester I a

Calculus 1 (for IEM) – 5 ECTS

Global Supply Chain – 5 ECTS

Programming, Modelling and Simulation – 5 ECTS

Semester I b

Organizational Behaviour and Group Dynamics – 5 ECTS

System Dynamics – 5 ECTS

Semester II a

Calculus 2 (for IEM) – 5 ECTS

Management Accounting – 5 ECTS

Materials and Molecules – 5 ECTS

Semester II b

B2B Marketing – 5 ECTS

Dynamics of Engineering Systems – 5 ECTS

Statistics and Stochastics – 5 ECTS

Optional courses

Year 2 (Product and Process Technology)						
Periode	Type	Code	Naam	Taal	ECTS	Uren
semester I a	verplicht	WBIE19001	<u>Fluid Dynamics</u>	Engels	5	
	Optio n A	WBIE15001E	<u>International Business Law for IEM</u>	Engels	5	
	Optio n B	WBIE15001N	<u>Nederlands Bedrijfsrecht voor IEM</u>	Nederlands	5	
	verplicht	WBIE18003	<u>Operations Research</u>	Engels	5	
semester I b	verplicht	TBOIIS-10	<u>Outlining and implementing</u>	Engels	5	

			<u>innovation strategy</u>			
	verplicht	WBIE18004	<u>Production Planning and Quality Control</u>	Engels	5	
	verplicht	WBIE17006	<u>Research and Design Methodology</u>	Engels	5	variabel
semester II a	verplicht	WBIE17001	<u>Industrial (Bio) Technology</u>	Engels	5	
	verplicht	WBIE19003	<u>Reactor Engineering</u>	Engels	5	
	verplicht	WBIE17005	<u>Technical Thermodynamics (IEM)</u>	Engels	5	
semester II b	verplicht	WBIE19005	<u>Gas-Liquid Mass Transfer</u>	Engels	5	
	verplicht	WBIE19004	<u>Process Design and Equipment</u>	Engels	5	
	verplicht	WBIE19002	<u>Transport Phenomena 2</u>	Engels	5	
Opmerkingen	Business law is offered in two versions: a Dutch version (Nederlands Bedrijfsrecht voor IEM, WBIE15001N) and an English version (International Business Law for IEM, WBIE15002E). You have to choose one. It is not allowed to register for both.					
» Year 2 (Production Technology and Logistics)						
Periode	Type	Code	Naam	Taal	ECTS	Uren
semester I a	verplicht	WBIE19001	<u>Fluid Dynamics</u>	Engels	5	
	Optie n A	WBIE15001E	<u>International Business Law for IEM</u>	Engels	5	

	Optio n B	WBIE150 01N	<u>Nederlands Bedrijfsrecht voor IEM</u>	Nederla nds	5	
	verpli cht	WBIE180 03	<u>Operations Research</u>	Engels	5	
semester I b	verpli cht	TBOIIS- 10	<u>Outlining and implementing innovation strategy</u>	Engels	5	
	verpli cht	WBIE180 04	<u>Production Planning and Quality Control</u>	Engels	5	
	verpli cht	WBIE170 06	<u>Research and Design Methodology</u>	Engels	5	varia bel
semester II a	verpli cht	NAMECH 05E	<u>Mechanics for IEM</u>	Engels	5	
	verpli cht	TBMACN- 11	<u>Modelling and analysis of complex networks</u>	Engels	5	
	verpli cht	WBIE180 05	<u>Signals and Systems</u>	Engels	5	
semester II b	verpli cht	TBCCC05 E	<u>Computer Aided Design and Manufacturing</u>	Engels	5	
	verpli cht	TBKRT05 E	<u>Control Engineering</u>	Engels	5	
	verpli cht	TBPRTE- 12	<u>Production Techniques</u>	Engels	5	
Opmerkin gen	Business law is offered in two versions: a Dutch version (Nederlands Bedrijfsrecht voor IEM, WBIE15001N) and an English version (International Business Law for IEM, WBIE15002E). You have to choose one. It is not allowed to register for both.					
» Year 3 (Product and Process Technology)						

Periode	Type	Code	Naam	Taal	EC TS	Uren
semester I a	verplicht	CHTGPE05E	<u>General Process Equipment</u>	Engels	5	
	verplicht		Optional module	Engels	5	
	verplicht	WBIE17006	<u>Research and Design Methodology</u>	Engels	5	variabel
semester I b	verplicht	WBIE17004	<u>Mass Transfer and Reactions in Gas-liquid Reactors</u>	Engels	5	
	verplicht		Optional module	Engels	5	
	verplicht	CHSPETM-09	<u>Special Process Equipment</u>	Engels	5	
semester II a	verplicht	WBIE18002	<u>Design Science</u>	Engels	5	
	verplicht		Optional module	Engels	5	
	verplicht	WBIE17002	<u>Product Technology (IEM)</u>	Engels	5	
semester II b	verplicht	TBIPPT15E	<u>Integration Project (IEM)</u>	Engels	15	
Opmerkingen	<p>In year 3 you have three optional modules. You may choose your optional modules from the list of optional modules for PPT. The Integration Project will be offered two times a year in Ib and IIb. In the period before the Bachelor Integration Project, you have to pass the course Design Science. Design Science is scheduled twice a year, in 1a and IIa You can only follow design Science if you are enrolled in the Bachelor integration Project for the period directly after the course Design Science. Note: choose the right coursecode: Integration Project IEM PPT: TBIPPT15E (instead of the coursecode mentioned here in Ocasys TBIP15E)</p>					

» Year 3 (Production Technology and Logistics)

Periode	Type	Code	Naam	Taal	EC TS	Uren
semester I a	verplicht	TBKRT05E	<u>Control Engineering</u>	Engels	5	
	verplicht	WINMTBK-09	<u>Numerical Methods</u>	Engels	5	
	verplicht	WBIE17006	<u>Research and Design Methodology</u>	Engels	5	variabel
semester I b	verplicht	TBCCC05E	<u>Computer Aided Design and Manufacturing</u>	Engels	5	
	verplicht	TBMETR-12	<u>Mechatronics</u>	Engels	5	
	verplicht		Optional module	Engels	5	
semester II a	verplicht	TBOC05E	<u>Design and Construction for IEM</u>	Engels	5	
	verplicht	WBIE18002	<u>Design Science</u>	Engels	5	
	verplicht	WBIE13001	<u>Digital and Hybrid Control Systems</u>	Engels	5	
semester II b	verplicht	TBIPDT15E	<u>Integration Project (IEM)</u>	Engels	15	

Opmerkingen

In year 3 you have one optional module. You may choose your optional module from the list of optional modules for PTL. The Integration Project will be offered two times a year in Ib and Iib. In the period before the Bachelor Integration Project, you have to pass the course Design Science. Design Science is scheduled twice a year, in 1a and IIa You can only follow design Science if you are enrolled in the Bachelor integration Project for the period directly after the course Design Science. Note: choose the right coursecode: Integration Project IEM DTI: TBIPDT15E (instead of the coursecode mentioned here in

Ocasys TBIP15E)

» **Optional Modules Product and Process Technology**

Periode	Type	Code	Naam	Taal	EC TS	Uren
hele jaar	keuze	WBIE180 06	<u>Capita Selecta PPT</u>	Engels	5	
semester I a	Part of Minor I&E*	EBB117A 05	<u>Entrepreneuria l Marketing</u>	Engels	5	3
	Part of Minor I&E*	EBB124A 05	<u>Introduction to Entrepreneurs hip</u>	Engels	5	3
	Part of Minor I&E*	EBB119A 05	<u>Technology- based Offerings</u>	Engels	5	3
	keuze	CHEVM1- 11	<u>Physical Properties of Materials 1</u>	Engels	5	
semester I b	Part of Minor I&E*	EBB118B 10	<u>Entrepreneurs hip Project</u>	Engels	10	8
	keuze	WBCH17 002	<u>Chemical Process Development and Design</u>	Engels	5	
	keuze	NAGE-10	<u>Geo-Energy</u>	Engels	5	
	keuze	WBEC190 00	<u>Introduction to Science Communicatio n</u>	Engels	5	
	keuze	WBEC190 01	<u>Oriëntatie op Onderwijs in de Rätawetensch</u>	Nederla nds	5	

appen

semester II a	keuze	NAEUG-12	<u>Energy from Gas</u>	Engels	5
	keuze	WBIE13003	<u>Molecular Biotechnology</u>	Engels	5

Opmerkingen

*Only as part of the (shortened) Minor Innovation & Entrepreneurship, organized by FEB and UGCE. Note that it is not possible to follow individual course modules of the minor I&E (e.g. follow 1 of the minor course modules). Students have to apply for this Minor. Ask the academic advisor for more information.

- In year 3 you have three optional modules. You may choose your optional modules from the list of optional modules for PPT.
- Restriction: it is only allowed to choose one of the Energy-courses (Geo-Energy OR Energy from Gas).
- New electives: Introduction to Science Communication (WBEC19000) and Oriëntatie op Onderwijs in de Bètawetenschappen (WBEC19001).
- Students who want to do other optional modules that are not in this list, will need to ask for approval from the Board of Examiners.

-Please note that it is not possible to schedule all potential combinations of compulsory courses and electives without overlap. Check the schedule as soon as is available to confirm that you can attend all lectures etc. in your preferred combination of courses.

» Optional Modules Production Technology and Logistics

Periode	Type	Code	Naam	Taal	ECTS	Uren
semester I a	Part of Minor I&E*	EBB117A05	<u>Entrepreneurial Marketing</u>	Engels	5	3
	Part of Minor I&E*	EBB124A05	<u>Introduction to Entrepreneurs hip</u>	Engels	5	3
	Part of Minor I&E*	EBB119A05	<u>Technology-based Offerings</u>	Engels	5	3
semester I b	Part of Minor	EBB118B10	<u>Entrepreneurs hip Project</u>	Engels	10	8

I&E*					
	keuze	NAGE-10	<u>Geo-Energy</u>	Engels	5
	keuze	WBEC19000	<u>Introduction to Science Communication</u>	Engels	5
	keuze	WBEC19001	<u>Oriëntatie op Onderwijs in de Bètawetenschappen</u>	Nederlands	5
	keuze	NAPMS-12	<u>Principles of Measurement Systems</u>	Engels	5
	keuze	NAGO-11	<u>Waves and Optics</u>	Engels	5
semester II a	keuze	NAEUG-12	<u>Energy from Gas</u>	Engels	5
Opmerkingen	<p>*Only as part of the (shortened) Minor Innovation & Entrepreneurship, organized by FEB and UGCE. Note that it is not possible to follow individual course modules of the minor I&E (e.g. follow 1 of the minor course modules). Students have to apply for this Minor. Ask the academic advisor for more information.</p> <ul style="list-style-type: none"> - In year 3 you have one optional module. You may choose your optional module from the list of optional modules for PTL. - New electives: Introduction to Science Communication (WBEC19000) and Oriëntatie op Onderwijs in de Bètawetenschappen (WBEC19001). - Students who want to do other optional modules that are not in this list, will need to ask for approval from the Board of Examiners. <p>-Please note that it is not possible to schedule all potential combinations of compulsory courses and electives without overlap. Check the schedule as soon as is available to confirm that you can attend all lectures etc. in your preferred combination of courses.</p>				
Toon korte vakomschrijvingen					

11.3.

BACHELOR'S DEGREE 'APPLIED INDUSTRIAL ELECTRONICS' at Aalborg University (Denmark)

OVERVIEW OF THE PROGRAMME 130 ECTS 3 YEARS				
OFFERED AS: 1-PROFESSIONAL				
SPECIALISATION:				
MODULE NAME	COURSE TYPE	ECTS	APPLIED GRADING SCALE	EVALUATION METHOD
1 SEMESTER				
<u>Basic Electronic Systems</u>	Project	15	7-point grading scale	Internal examination
<u>Calculus</u>	Course	5	7-point grading scale	Internal examination
<u>Fundamental Energy System Physics and Topology</u>	Course	5	Passed/Not Passed	Internal examination
<u>Problem-based Learning in Science, Technology and Society</u>	Course	5	Passed/Not Passed	Internal examination
2 SEMESTER				
<u>Microprocessor Based Systems</u>	Project	10	7-point grading scale	External examination
<u>Introduction to Electrical Engineering</u>	Course	5	7-point grading scale	Internal examination
<u>Linear Algebra</u>	Course	5	7-point grading scale	Internal examination
<u>Real-Time Systems and Programming</u>	Course	10	Passed/Not	Internal examination

<u>Languages</u>			Passed			as
3 SEMESTER						
<u>Instrumentation</u>	Project	15	7-point grading scale	External examination		O
<u>AC Circuit Theory</u>	Course	5	7-point grading scale	Internal examination		W
<u>Applied Engineering Mathematics</u>	Course	5	7-point grading scale	Internal examination		W
<u>Signal Processing</u>	Course	5	7-point grading scale	Internal examination		W
4 SEMESTER						
<u>Control Systems</u>	Project	15	7-point grading scale	Internal examination		O
<u>Fundamental Control Theory</u>	Course	5	7-point grading scale	Internal examination		W
<u>Modelling and Simulation</u>	Course	5	7-point grading scale	Internal examination		W
<u>Power Electronics</u>	Course	5	7-point grading scale	Internal examination		W
5 SEMESTER						
<u>Automation including Power Electronics</u>	Project	15	7-point grading scale	External examination		O
<u>Modern and Digital Control</u>	Course	5	7-point grading scale	Internal examination		W
<u>Electrical Machines</u>	Course	5	7-point grading scale	Internal examination		W

<u>Numerical Methods</u>	Course	5	7-point grading scale	Internal examination		O
6 SEMESTER						
<u>Elective Projects 6th Semester</u> One project must be chosen	Project	15				
<u>Mechanics</u>	Course	5	7-point grading scale	Internal examination		W
<u>Modelling and Control of Robot Manipulator</u>	Course	5	7-point grading scale	External examination		W
<u>Test and Validation including System Set-up and Understanding</u>	Course	5	7-point grading scale	Internal examination		W

Annex 1. Suggested new state standard for study programme Electrical and Electronics Engineering