Expert group joint opinion

Evaluation Procedure: Assessment of Study Field

Higher Education Institution: University of Liepāja

Study field: Information Technology, Computer Hardware, Electronics, Telecommunications, Computer Management, and Computer Science

Experts:
1. Tatjana Rubina (Chair of the Experts Group)
2. Vladislav Fomin (Secretary of the Experts Group)
3. Sirje Virkus
4. Kristaps Opincāns (Student Union of Latvia)
5. Mairita Zaķe (Employers' Confederation of Latvia)

Summary of the Assessment of the Study Field and the Relevant Study Programmes

In general, the study field provides the industry with much-needed ICT specialists of different specialties, as defined by the five study programmes.

The quality of education and the high level of skills of the graduates are insured by a number of internal and external processes within the study field, such as: the quality assurance system; university cooperation with local and foreign companies for student practice and educational exchange.

The study programmes of the study field are implemented by qualified staff, with the support of adequate material, technical and informational resources.

The university has charted a development plan, which indicates priorities for qualified academic and scientific personnel, as well as the quality of studies and marketing activities.

While the existing processes and resources generally contribute to the achievement of the aims and learning outcomes of the study field and the relevant study programmes, the experts noted a number of improvements which have to be implemented.

Specifically, the experts note the absence of systematic efforts for the improvement of human and technical resources, except where required by law / administrative procedures, and at times limited availability of resources for the fulfillment of desired working conditions and career goals of the academic staff.

Experts highlight many more strengths (S) than weaknesses (W):

(S1) Overall very good material, technical, and informational bases, yet

(W1.1) didactic tools offered by Moodle are not used;

(W1.2) there are discrepancies in how information is structured and presented in Moodle across different programs, etc.

(S2) Sufficient level of qualifications of the academic staff, yet

(W2) Number of high quality research publications in relevant fields should be improved.

(S3) Great collaboration on the national level with different stakeholders- state and private organizations - in implementing the teaching, research, and in continuous improvement of the curricula, yet

(W3.1) The high drop-out rate is a real concern across the study field, and

(W3.2) number of students is relatively low.

(S4) The study Field Council is in place, yet

(W4) the explicit impact of its work is not obvious (e.g., it is not clear how didactic or content innovations are introduced)

(S5) Graduates from the lower level study program can directly enter a higher level study program - from Bachelor to PhD, no additional entry credits are necessary.

Professional bachelor study programme "Information Technology" (42484) (SAR, p.161) was licensed in 2012. The program's accreditation is valid till 31.12.2023. Number of students in the program currently is 98 and the number was stable since the launch of the program with the exception of the 2017-2018 peak to 130. Drop-out rates provided in SAR for the period 2015-2021 are high, stable at ca. 30 students per annum, or about ⅓ of the total number of students for the same year, with the exception for 2017-2018 when the drop-out rate was about ½ of the total number of students in the program. Duration of the study is 4 years. Graduates of study program receive qualifications Software engineer.

Professional bachelor study programme "Smart Technologies and Mechatronics" (42523) (SAR, p.185) was licensed in 2021. The program's accreditation is carried out for the first time. Number of

students in the program currently is 11. Duration of the study is 4 years. Graduates of study program receive qualifications Mechatronics engineer.

Low representation of subjects related to industrial mechatronic systems and their control (PLC) in the study program. This issue also complained about by students

Academic bachelor study programme "Computer Science" (43484) (SAR, p.106) was licensed in 2006. The program's accreditation is valid till 31.12.2023. Number of students in the program currently is 18 and the number was relatively stable in the range of 10 to 18 for the last 7 years (since 2015). Drop-out rates provided in SAR for the period 2013-2021 shows a great variance, at times the number of drop-outs surpassing the number of new enrolled students for the same year (2013-14-15-16), at other times varying between 50% and 80%. The rate of drop-outs to the total number of students varies between 30% to 50%. Duration of the study is 3 years. Graduates of study program receive a degree of Bachelor of Natural Sciences in Computer Science.

Professional master study programme "Information Technology" (47482) (SAR, p.80) was licensed in 2006. The program's accreditation is valid till 31.12.2023. Number of students in the program currently is 24 and the number was relatively stable in the range of 22 to 27 for the last 4 years (since 2018). The drop out rates were in the range of 3 to 5 in the first 4 years of the reporting period (2013-1016), but increased to 7-10 in the last four years of the reporting period (2018-20121). During the same period, group-out rates started to exceed the number of graduates. During the same period (2018-2021), the rate of drop-outs to the total number of students varies between 13% and 42%. Duration of study is 2 or 3 years, depending on the branch of the program. Graduates of study program receive qualifications Professional master's degree in information technology. Depending on the branch of the program, students can obtain qualifications of "Lead software engineer or information technology manager".

Doctoral study program "E-studies Technologies and Management" (51482) (SAR. p.126) was licensed in 2007. The program's accreditation is valid till 31.12.2023. According to SAR (p.131), the average number of enrollments per year is 2-3, the total number of students in the program remained stable between 2013 and 2021 at the range of 9 to 14. 8 students are reported to have graduated during the reporting period (2013-2021), while 10 students reported exmatriculated. Duration of the study is 4 years. Graduates of study program receive a degree of Doctor of Science (Ph.D) in Electrical Engineering, Electronics, Information and Communication Technologies; or Education Sciences.

I - Assessment of the Study Field

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1.1 Management of the Study Field

Analysis

1.1.1.The goal of the study field field "Information Technology, Computer Engineering, Electronics, Telecommunications, Computer Management, and Computer Science" is clearly defined (SAR, p.16): "to provide students with the opportunity to acquire quality academic and vocational education in information technology, computer engineering, electronics, telecommunications, computer management, and computer science programmes, including interdisciplinary study programmes, making it possible for them to prepare for independent, creative, interdisciplinary research and professional activities."

The defined goal is attainable and complies with one of the directions of the strategic development of the higher education institution - "Computer, information, and environmental technologies for sustainable growth". The study field also meets the needs of society and the national economy which is confirmed both by the report about the 84 ICT companies operating in Liepāja (according to

the information gathered by the Liepāja Digital Innovation Park) and the general demand for ICT specialists, as well as by the confirmation of employers' representatives during the visit. Well-grounded interconnection of IT bachelor's, masters and doctoral study programs. The integration of the "Smart Technologies and Mechatronics" study program into the study field is not described. LiepU has integrated into strategic development planning documents strengths, weaknesses, opportunities and threats of the study field that were identified and analyzed.

1.1.2. Study field development plan is very much related to SWOT. The development plan takes into account the shortcomings and threats concluded in the SWOT analysis and tasks have been created to prevent and mitigate the shortcomings and threats. For example, in SAR (p.20) it is stated "insufficient internships of instructors at universities abroad" as one of the weaknesses and in the study field development plan (p.2) as one of the tasks it is defined to "encourage the increase of academic staff mobility". In SAR (p.20) it is stated "low number of foreign guest instructors involved in the study programmes" as one of the weaknesses and in the study field development plan (p.2) as one of the tasks is defined to "increase the participation of international and Latvian guest lecturers in each study program once a year in the amount of at least 4 CP". In SAR (p.20) it is stated "gaps in the purchasing and updating of computer hardware and specialized laboratory equipment" as one of the weaknesses and in the study field development plan (p.4) as one of the tasks it is defined as "to improve the material and technical provisions of the study process". In SAR (p.20) it is stated "low number of students in all study programmes" as one of the weaknesses and in the study field development plan (p.4) as one of the main development goals it is defined – "Position of FSE study programs at competitive level in Latvia and abroad in terms of quality of education, inform the public about the opportunities and advantages of study programs and create a sense of belonging and loyalty in LiepU students, graduates and employees".

As well as, the specific responsible persons for the execution of these tasks, the deadline for the execution of the task and the expected results, which are mostly specific, clearly understandable and achievable, are determined in the development plan. However, the SWOT analysis also mentions weaknesses for which no task has been created to reduce them directly for example - "Relatively low activity of instructors in producing publications" (SAR p.20). However, some of the tasks mentioned in the development plan can help reduce the weakness in an indirect way, for example "English language skill improvements for lecturers" and "Use project implementation experience and appropriate financial attraction practices for the support system improvements".

The management structure of the study field and the corresponding study programmes is oriented towards the development of the study field, decision-making takes place efficiently, the support provided by the administrative and technical staff ensures all the needs of the study programmes corresponding to the study field.

1.1.3. The management structure of the study field is well understandable. SAR (p.23-27) describes the list of people involved in the management of the direction and their tasks in the implementation of the study program. For example, the following people participate in the organization of the faculty - Dean, Methodologist, Secretary, Administrative assistant, Laboratory Assistant, Faculty Council Chairman, Head of the field of study, and Head of the programme. The following units with appropriate responsible people are also involved in the implementation of the study program - Institute of Science and Innovative Technologies (ISIT), Library, International Relations Division, Study Division, and Information Technology Centre. Both in SAR (p.22) and during the visit, the management of the study field mentioned that the Faculty Council and teaching staff meetings take place once a month. The fields of study under the supervision of the faculty are evaluated and monitored at the meetings of the Faculty Council, at the general meetings of the faculty, and in the

work groups of the teaching staff in the field of study. The results of student course questionnaires, as well as the opinion of employers' representatives, are discussed at these meetings.

However, during the visit, student representatives mention that their opinion on these questionnaires, as well as the individually focused attention in the case of some specific courses, are not taken into account. Similarly, during the visit, the students mentioned ineffective lesson planning and insufficient communication with students regarding lesson planning in some cases.

However, good cooperation has been established with the representatives of the employers regarding updating the content of the programs in the commissions for the defense of final theses, which was mentioned by the management of the study field during the visit, which is also confirmed by the representatives of the employers. This shows that the management of the content of the programs in the study field is oriented towards the development of the study field.

During the visit, the teaching staff mentioned that more support for teaching needs would be needed - technical support (for example, computers) as well as human resources support. It is mentioned as a general remark from the teaching staff of the study direction without concretizing the study program.

A system has been set up and procedures developed for the admission of students, for the recognition of the study period, professional experience, prior formal and non-formal education and for the assessment of students' achievements and learning outcomes, they are logical and effective, the involved stakeholders are informed about the system.

1.1.4. LiepU has set clear admission rules (SAR 2.1.4). Admissions rules for each academic year are Senate-approved and are available to everyone on the LiepU website (in respective pages of each study programme and apply.liepu.lv). Competition is open and fair, with coherent and reasonable requirements. LiepU has also set up regulation regarding the recognition of competences acquired outside formal education or through professional experience, yet it seems that there have not been cases when this regulation has been enacted apart from recognition of required internship within study programmes. The same document also defines a procedure for recognizing previous education. Regarding the latter there are indications that it has been invoked in order to acknowledge previous studies of students in some limited cases. It can be concluded that in experts opinion methods, principles and procedures for assessing previous achievements of students have been developed and are clearly defined. The admission rules are clearly defined and relevant for study subjects. All relevant information is publicly available to stakeholders within various parts of LiepU webpage.

1.1.5. The requirements for the assessment of study results are incorporated into the study course descriptions which are published on the course page in the Moodle. At the start of studies, students are acquainted with requirements and resources by a delegated representative of the dean's office. Also, the study course Introduction to Studies, Technology and Research in bachelors programs addresses the necessary requirements of the study program. Also, there are publicly available Senate-approved regulations regarding course and module examinations which define procedure or conducting examination within study courses. The main task of assessing the achievements of students is up to the teaching staff – they usually evaluate students using various different methods – formal ones including seminars, tests, presentations and informal ones – discussions with students regarding study material, feedback and experience. However, there are indications that consecutive evaluation of procedures for achieving the aims of study programmes and the needs of students is not being analyzed. Given the complexity of learning outcome based education, there must be

comprehensive way how student achievement is being evaluated. In experts opinion, LiepU should strengthen the staff and programme management capacity regarding understanding of learning outcome based approach so that methodological approach is more uniform across courses. In conclusion, LiepU does comply with criteria, yet there is lack of consistently implemented advanced assessment methods reflecting the requirement to assess all defined learning outcomes within study courses.

1.1.6. The principles of academic integrity are governed by the University Senate-approved regulations including Code of Academic Integrity which defines responsibilities within staff and student body to ensure understanding and adherence to principles of academic integrity. LiepU takes measures to control and prevent plagiarism during formative assessment. For final study research works LiepU uses the unified computerized plagiarism control system of the University of Latvia - all final theses prepared by the students are checked using the inter-university single computer-based plagiarism control system after their submission in PDF format in the LAIS system. As University indicates, the most common reason for such text matches was found to be that students include e.g. software documentation in the annexes and other standardized forms. In other cases it is up to the discretion of teaching staff to ensure that work is free of plagiarism. However, representatives of University note that given the nature of the teaching process in general plagiarism is not a continuously relevant issue and extreme cases are easily identifiable. In general, LiepU complies with the criteria.

Conclusions on this set of criteria, by specifying strengths and weaknesses

Conclusions
In general, the study field provides the industry with much-needed ICT specialists. The development plan for the study field is well elaborated and the priorities of the field are visible in it. The development plan indicates priorities for qualified academic and scientific personnel, as well as the quality of studies and marketing activities. Although theoretically there is a mechanism for the organization and development of the study field, it is not always effectively implemented.

Strengths
1. The study field meets the needs of society and the national economy.
2, The development plan takes into account the shortcomings and threats reported in the SWOT analysis and tasks have been created to prevent and mitigate the shortcomings and threats.
3. The good cooperation with the representatives of employers shows that the management of the content of the programmes of the study field is oriented towards the development of the study field.

Weaknesses
1. No task has been created to directly reduce the weakness of relatively low activity of the lecturers in the preparation of publications reported in the SWOT analysis .
2. In some cases, ineffective lecture planning and insufficient communication with students regarding lecture planning were reported by students.
3. Lack of feedback to students on the analysis of the results of the study course evaluation questionnaires.
4. There is no consistent approach regarding assessment methods and principles of evaluation of defined learning outcome achievements.

1.2. Efficiency of the Internal Quality Assurance System

Analysis

1.2.1. LiepU has established and published the Quality policy and LiepU Quality Manual, which are publicly available on website accordingly: https: //www.liepu.lv/en/124/quality-policy and https://www.liepu.lv/uploads/%   C4%80SD/ERASMUS%20dokumenti/Quality%20Manual.pdf. Information provided under the links presents a short description that repeats the overarching goal of the university. The higher education institution has established procedures and regulations for quality assurance, but they are not accessible through open access to the general public.

The aim of Quality policy corresponds to the overall goal of LiepU (SAR p.5., https://www.liepu.lv/en/124/quality-policy, LiepU Quality Manual available at: p.1): "To provide research-based, necessary for region, competitive high quality opportunities for higher professional, academic education and lifelong learning in Latvia and internationally by promoting the development of the Latvian economy based on knowledge and professional competences and strengthening a creative, culture-oriented society". Contrary to what is stated in the LiepU Quality policy, SAR (p.32) reads that the Quality Management System (QMS) has been created to support the achievement of the goals set in the Development Strategy of Liepaja University. In the expert's opinion, the Quality policy should be aimed at promoting the university's progress towards continuous quality improvement, the achievement of the strategic development goals, determining the principles related to quality and the set of actions necessary to achieve them in science, studies and cooperation with society.

The aim of the used LiepU Quality policy is achieved, taking into account European standards and guidelines for quality assurance in the European Higher Education Area (ESG-2015) (SAR p.5., https://www.liepu.lv/en/124/quality-policy). However, there is a lack of information about what are the LiepU quality principles, for example:
- ethical and equal treatment;
- high work, behavior, contact and communication culture;
- evidence-based approach to decision-making;
- development based on creativity, cooperation and openness, excellence in education and research excellence, as well as efficient use of resources;
- continuous and sustainable development based on science and the use of innovative technologies towards achievements and excellence;
- active participation in achieving the goals of the country's sustainable development, the EU common education space, society, employers, students, graduates and other interested parties etc.

In order to implement the overall goal and goals, the University of Liepaja uses the development and planning documents, the internal Quality Management System, as well as uses the databases and procedures of the internal normative documents (SAR, p.12).

According to SAR (p.12.), LiepU has defined procedures in the LiepU Quality manual and other documents how the requirements of the QMS are reached and how the development of the quality culture takes place. Unfortunately, experts weren't able to find these SAR-reported resources for quality management in the LiepU Quality manual: i.e. description of procedures, list of documents with their exact titles. The information it provides is general. There is a lack of the clearly defined requirements of the quality assurance, activities for ensuring continuous development and evaluating the achieved results in determining the necessary improvements which would allow an expert to assess the system appropriately.

According to the information provided in the Liepaja University Development Strategy for 2016–2020 (p.4), which was prolonged until 2023 by LiepU Senate of 25.01.2021 (protocol No. 7), LiepU has a certified Quality Management System (hereafter – QMS) in accordance with ISO 9001:2008.

However, the certification period of QMS expired at the end of 2016 and the ISO 9001:2008 standard has been revised by ISO 9001:2015 (ISO official website, https://www.iso.org/standard/46486.html). Support processes of this system include basic budget planning, project development and monitoring, academic and general staff assessment, etc. Within the QMS, the goals and measurements of processes are regularly determined, and the results are assessed, which are reflected in management reports. Existing QMS integrated the measurements that are important for ensuring the achievement of the development goals of LiepU. Liepu has also noted in their Development Strategy that it is important to assess the usefulness of the current system, the possibilities for integrating in it the quality indicators of higher education and the need for re-certification; and the compliance of other quality management systems with the strategic objectives of LiepU and their usefulness (Liepaja University Development Strategy available at https://www.liepu.lv/uploads/%C4%80SD/ERASMUS%20dokumenti/Liepaja_University_Development_Strategy_Summary_2016-2023_25.01.2021.pdf, p.4).

One of the options to consider to prove the effectiveness of the used Quality Management System and to gain the reasonable confidence for organization's management and customers in the organization's capabilities and performance is certification in accordance with ISO 9001:2015, "Investors in Excellence" or other standard.

The Quality assurance system defines procedures that regulate the creation, licensing, and accreditation of study programmes. Separate procedures govern the preparation, approval, and change management of courses and study plans, as well as define organising and conducting examinations, which also stimulates the principle of achieving and evaluating results (SAR, p.28-30).

Procedures are in place to govern the creation and management of changes to annual study plans, and the preparation and management of changes to timetables (SAR, p.30). There are developed programs of study courses which include aim and tasks definition of study course, description of results and outcomes acquired within the course, as well as the expected result and competences to be acquired performing separate independent works (Annexe, Descriptions of the study courses/ modules). However, the expert did not find a connection between the defined independent works and the requirements for obtaining a ECTS where different other types of works are mentioned: tests, methodical material, assignments, exams. It is also not clear how the final grade of the course is formed, how independent works affect it. It is recommended to determine the test form for each achievable result, how teaching staff checks and evaluates whether the result is achieved, as well as describe the mechanism or formula for calculating/forming the final grade of the course. In addition, the results of the study courses are formulated differently in different study courses, there is no uniform style of description. It is recommended to introduce a uniform style.

LiepU has established The regulations on course and module examinations that defines the procedure for organizing and conducting examinations. The regulation document is publicly available online on LiepU website at https://www.liepu.lv/uploads/dokumenti/studentiem/Regulations% 20for% 20Course_Module%20Exa 29 minations.pdf (SAR, p.28-29.). Within the study courses, the teaching staff uses various didactical tools and methods to evaluate, monitor and control students' learning achievements: theoretical tests (organized in the moodle system), practical tests, , exams, seminars, practical games and problem solving, presentations of homeworks, research and study projects, defense of study projects, etc.. Each course has intermediate tests, the number and content of which are determined by the course instructor, and a written final test (exam). For each test, the course instructor can choose the weighting to be used for the final mark. The assessment methods chosen by the instructor depend on the specifics of the course and the requirements set in the course descriptions

(SAR, p.28.).

During the visit the head of department and study program directors mentioned that there are developed procedures, regulations, orders and plans that are available for the teaching staff. Teaching staff are notified for orders and document changes by e-mails and are able to familiarize themself with documents in the internal system. Additionally, the teaching staff mentioned that the management of the faculty, dean's office contacts the teaching staff personally and reminds them of important things to do.

Self-assessment report development team during the visit mentioned that QA procedures and documents are reviewed regularly. Some procedures are reviewed several times per year. Other, depending on legal regulations changes or when it is necessary. But some regulation documents should be revised, for example, the document which defines student rights and obligations was reviewed last time in the 2011, Liepaja University 'Regulations on final examinations, national examinations and final national examinations' was reviewed last time in the 2016, Evaluation criteria for bachelor theses, diploma theses, diploma projects and qualification theses was reviewed last time in the 2005.

Separate directions or groups of processes with responsible persons are defined at the level of university. LiepU has organized Information technology, computer engineering, electronics, telecommunications, computer control and computer science study field council (hereinafter – study field council) which organizes and performs the development and monitoring of the implementation of study programmes of study field. Study field council includes the dean of the faculty, the head of the study field, the study programmes directors, representatives of the academic staff, students (at least one student from each study fields's study programme) and employers' representatives (INSTRUCTIONS ON LIEPAJA UNIVERSITY STUDY DIRECTIONS' COUNCILS, p.1.).

Study programs and content of study courses are reviewed regularly. The meetings, discussions are organized. Feedback from students is obtained. Opinion of employers is taken into account. Employers are involved in the defense commission and share their opinion about students' knowledge, skills and competence within the internship (Meeting with employers, teaching staff, study program directors). Some representatives from employers are involved in the lectures' delivery about necessary valuable topics (meeting with employers).

According to the information provided in the Self-assessment report of the study field of the period 2020./2021 (SFSAR) publicly available at https://www.liepu.lv/uploads/dokumenti/zinojumi/Studiju%20virziens_IT_2020._2021.st.g._ML.pdf "the development and operation of the programs is coordinated both with the sustainable development planning documents of the Kurzeme region and with the "Sustainable Development Strategy of the City of Liepāja until 2030", in which Liepāja is marked as an education, science and research center, as well as the development of nature and engineering in Liepāja is emphasized" (SFSAR, p.5.).

The higher-education quality improvement method has been used to ensure that existing doctoral programmes can be improved in line with the current trends in information technology, computer science, and engineering, and in line with public demand, based on the EFQM model (SAR, p.32).

For the Study field "Information technology, computer engineering, electronics, telecommunications, computer management and computer science", there is a development plan for the period of year 2022 to 2027, where there are identified the development directions and separate tasks, person(s)

responsible for execution, Deadlines and Expected results of tasks (annex Plan for the development of the study field).

The faculty's management of the study field has established a procedure for the management and control of the final thesis development which starts in the spring before last study year and includes regular monthly meetings during the last study year where students report on their work progress (meeting with the head and study programmes' directors). The implemented procedure ensures a well-organized final thesis development process.

LiepU has established the principles of academic integrity and ethical principles stated in the Liepaja University Code of Academic Integrity published on the LiepU website: https://www.liepu.lv/uploads/%C4%80SD/ERASMUS%20dokumenti/LiepU %20Akademiska%20godiguma%20kodekss_eng.pdf that must be integrated in the study process in higher education. The final theses of all students are checked for plagiarism after their submission in the LAIS system using a single computer-based plagiarism control system maintained by the University of Latvia. During the self-assessment review period, no plagiarism was detected in the works of students in the field of study. During the self-assessment review period, no plagiarism was detected in the works of students in the study field (SAR, p.29).

On the LiepU website in the webpage Documents at https://www.liepu.lv/lv/654/dokumenti different types of regulatory documents are published in Latvian language which are important for current and potential students as well as potential employees. Documents are divided in several groups:
- Development strategy;
- Procedures;
- Rules;
- Regulations;
- Self-assessments of study fields;
- LiepU's Quality Policy;
- Submission forms.

Most of the regulatory documents are translated into English language. The regulatory documents are published in English language for foreign students on the webpage Documents and regulations at https://www.liepu.lv/en/61/documents-and-regulations, but they are not divided in groups and are mixed in one list.

On the webpage Writing study papers at https://www.liepu.lv/lv/293/studiju-darbu-rakstisana#, documents and instructions for writing various study papers are published for students. But the webpage can be only found through the Latvian language version of the website, and only two documents from five documents are translated into English which are binding on foreign students for a clear and complete understanding of aspects related to writing study papers, i.e. Methodological guidance for WRITING AND PRESENTATION OF STUDY WORKS, Submission form to the director of the study program on the topic of study, qualification, bachelor's, diploma thesis and master's thesis.

Summarizing above mentioned, experts conclude that the Quality assurance system generally contributes to the achievement of the aims and learning outcomes of the study field and the relevant study programme, as well as ensures continuous improvement, development of the study field and the relevant study programmes, but several improvements are needed:
- Thoroughly revise the LiepU Quality policy re-defining the aim of policy and adding information of LiepU quality principles, indicating responsible persons for separate processes etc.
- Revise LiepU Quality manual by implementing the clearly defined requirements of the quality

assurance, description of procedures, list of documents with their exact titles, activities for ensuring continuous development and evaluating the achieved results in determining the necessary improvements.

- Improve the programs of study courses by explaining/introducing the connection between the defined independent works and the requirements for obtaining a ECTS; describing how the final grade of the course is formed, how independent works affect it; describing the mechanism or formula for calculating/forming the final grade of the course; determining the test form for each achievable result, how teaching staff checks and evaluates whether the result is achieved; implementing the uniform style of results description of the study courses.

- Revise and reconfirm regulation documents whose approval date exceeds 2-3 years.

- Translate into English language all the documents necessary for the study process and publish them on the English language version of LiepU webpage, for example, documents related to the writing study papers.

1.2.2. LiepU has established internal regulatory documents, which define the procedure for the development, review and approval of study programs and study courses/seminars, as well as the procedure for implementing their changes, for example:

- Procedure for the development and licensing of study programs (Annex, S-6-I_Development and licensing of study programmes_ENG) which is presented as a flowchart diagram visualizing steps of the procedure with responsible representatives.

- Procedure for the development and approval of study courses (Annex, S-7-I_Development and approval of study courses_ENG) which is presented as a flowchart diagram visualizing steps of the procedure with responsible representatives.

- Procedure for the creation and implementation of lifelong education (further education and interest education) courses/seminars at the University of Liepāja publicly available at https://www.liepu.lv/uploads/dokumenti/studentiem/Kartiba%20muzizglitibas%20kursu_seminaru%20izveidei%20un%20istenosanai%20LiepU.pdf

- The content of study courses/modules is updated in accordance with the QMS procedure S-7-II Management of changes in study courses which is presented as a flowchart diagram visualizing steps of the procedure identifying those responsible.

Although the diagrams explain the steps/phases to be taken and those involved, as well as the templates to be used, they lack precise information about the deadlines for the work to be done and the recording/entering of information into the internal system, explanation of difference between significant and non-significant changes.

To develop a higher quality study program, several experts were involved in the development of the vocational bachelor study programme in Smart Technologies and Mechatronics, and a consultant (SAR, p.32). Communication, exchange of information, views, experiences and opinions, setting of objectives, and discussing progress with the experts of the work group were organized regularly and reported in the monthly progress report (SAR, p.32).

According to information provided in SAR, in developing the study programme, the resources and development trends of the university and the existing study programmes, student trends, student involvement in research and student exchange programmes, graduate employment in the profession of studies, etc. were investigated and analyzed (SAR, p.33.).

LiepU prepares an annual SA report of the study fields that includes a description of the study programmes, analysis results of a survey submitted for each study programme by students,

graduates, and employers for the faculty as a whole and for each study programme (SAR, p.31-32.).

During the Accreditation experts' visit, teaching staff mentioned that they regularly review programs of their study courses. The offered changes are discussed and agreed with the study program director. There tend to be situations when the study program director suggests some ideas for study course development, improvement.

At the start of the bachelor and master degree programmes, the head of the programme or their delegated representative of the dean's office familiarizes students with the programme requirements and resources. The programme requirements and resources are included in the course Introduction to Studies, Technology, and Research (2 credits in semester 1) of the bachelor degree programme (SAR, p.28.).

Students are informed about the requirements for successful completion of the course and for gaining credits during the first lecture. Information is also published in each study course on the course pages in the e-learning environment Moodle. Teaching staff provide consultation, mentoring to provide feedback of mistakes made at work (meeting with teaching staff, students). Students can access information and legal documents related to studies on the webpage (meeting with students).

Student delegates are involved in different institutions and participate in the development of regulations, rules, and other regulatory documents, and in the monitoring of their implementation (SAR, p.32) that ensures that students' opinions are expressed, heard and respected.

During the experts' visit, students mentioned that they resolve problematic situations with the teaching staff directly and, if necessary, turn to the director of study programs. Their opinion is heard.
During the experts' visit, graduates denied receiving feedback on their suggestions, but noted that there are noticeable positive changes in the faculty compared to when they were studying.

Employers' representatives are involved in the Study field council (INSTRUCTIONS ON LIEPAJA UNIVERSITY STUDY DIRECTIONS' COUNCILS, p.1.), this involvement enables obtaining of suggestions and recommendations from representatives, the opportunity to use their experience in real projects when developing a study field and study programs that meet the needs of the market.

Liepaja University 'Regulations on final examinations, national examinations and final national examinations' (approved at the Liepaja University Senate meeting of 15 December 2014, Minutes No 4; amended at the Liepaja University Senate meeting of 25 April 2016, Minutes No 9, amended at the Liepaja University Senate meeting of 25 April 2016, Minutes No 9) establishes a commission for bachelor, master, and vocational higher education study programmes, consisting of five persons (chair and four members, one of whom is the secretary). The head of the commission and at least half of the members must be representatives of professional industry organizations or employers in the field. This composition of the final examination board also ensures that the results achieved are monitored by employers and professional organizations.

Employers' representatives are involved in the commission for bachelor, master, and vocational higher education study programmes. According to Liepaja University 'Regulations on final examinations, national examinations and final national examinations' the head of the commission and at least half of the members must be representatives of professional industry organizations or employers in the field, that ensures the students' results achieved are monitored by employers and professional organizations (SAR, p.33). The heads of the final/national examination commissions fill

out a survey conducted with the aim to analyze and assess the employer's satisfaction. Questions about student theoretical knowledge, practical skills, and recommendations for further studies and work are included in the internship evaluation form (SAR, p.31-32.).

During the experts' visit, employers' representatives mentioned that they revise, update and suggest the topics of bachelor's and master's thesis yearly, as well as provide internship and further work facilities for the students of study field. Many graduates work in the companies where they did their internship.
During the experts' visit, the teaching staff mentioned that a general survey of students' satisfaction with the work of the teaching staff and the studied course is conducted in the spring semester. This survey was made mandatory to all LiepU students last year and will be held each academic year. The results of the survey are available in the LiepU Quality Management System (QMS) (SAR, p.31-32.).

The procedures for the development and review of the relevant study programmes of the study field and the feedback mechanisms have been defined and they are logical, efficient, and available for stakeholders, except graduates. The feedback to students is provided mostly in mutual form, in separate cases they receive official reply through DVS Namejs. As student delegates are involved in the Study field council which organizes and performs the development and monitoring of the implementation of study programmes of study field, and in different institutions of LiepU, as well as participate directly in the development of regulations, rules, and other regulatory documents, they are able to monitor implementation of above mentioned documents.

LiepU receives feedback from graduates through their survey. But the feedback to the graduates is not provided directly. They are able to familiarize themselves with the annual SA report. Perhaps, the meeting of graduates with the representatives of the faculty once in a period could prevent the lack of feedback.

The feedback to the employers is provided mostly mutually during meetings and changes made/implemented can be assessed during the final examinations. In addition, the employer's representatives are directly involved in the development of study programs and they are able to monitor the process and receive immediate feedback.

1.2.3. Experts didn't find a separate regulatory document that defines the mechanism developed for submission of student complaints and suggestions. But in a certain regulatory documents it is mentioned that students have the right to do so, for example:
- In the regulatory document UNIVERSITY OF LIEPAJA INTERNAL ORDER REGULATIONS FOR STUDENTS publicly available at https://www.liepu.lv/uploads/files/LiepU%20ieksejas%20kartibas%20noteikumi%20studejosajiem%20English.pdf is mentioned that students' have rights: "3.6. to submit proposals and complaints to the administration staff concerning the studies, as well as the work of LiepU academic and general staff; to receive an answer in due time;", but teaching staff have "to accept proposals, suggestions and critics, to take appropriate measures to encourage improvements"
- In the regulatory document RULES FOR COURSE/MODULE EXAMINATIONS publicly available at https://www.liepu.lv/uploads/dokumenti/studentiem/Noteikumi%20par%20studiju%20kursa_modula%20parbaudijumiem_speka%20no%2001.09.2022.pdf , students have right to submit an appeal to the dean of the faculty no later than the next day after the test or result announcement, which is considered by the dean of the faculty within one working day.

According to the information mentioned in SAR, replies to student proposals are provided in

accordance with the procedures laid down in the laws and regulations, and included in the self-assessment reports of the fields of study, indicating the changes made to the study programmes (SAR, p.34-35).

The description of procedure for submitting complaints and proposals is provided in the SAR p.35 and it is as follows:
- The student submits a written application to the dean's office or emails it to the dean's office or the programme director.
- The application is registered on document management system DMS "Namejs" (dvs.liepu.lv) and the tasks are sent to the responsible individual — the dean, the programme director, the responsible member of the academic staff or another manager of the LiepU institution. Deadline for review — 10 working days.
- If necessary, a question might be included and reviewed in a Council meeting of the Faculty of Science and Engineering (FSE) , and a decision might be made.
- The applicant and the responsible person is informed about the response or action to be taken.
- If necessary, the FSE is ready to cooperate with other departments of LiepU to solve an issue. (SAR, p.34-35).

During the meeting with students it was mentioned that students once wrote a complaint, which was signed and submitted to the dean in written form, as well as the situation/problem was solved.
In the LiepU website at https://www.liepu.lv/lv/170/struktura and in the annex The management structure of the higher education institution is mentioned that one of the structures of LiepU is the Academic Arbitrage. But experts didn't receive the Regulation of Academic Arbitrage and weren't able to assess complaints handling procedures.

All students can ask questions and get to be heard out on workdays via phone (63454046), email (dif@liepu.lv), or on-site at the dean's office of the FSE (Lielā ielā 14, Room 414), or on the premises of LiepU (meeting with the Dean and study program directors, SAR p.35).

Summarizing the above mentioned, LiepU has established the mechanism developed for submission of student complaints and suggestions, that promotes the implementation of improvements. Students are informed about such opportunity and receive feedback. However, there is a lack of procedure description for submission of student complaints and suggestions and their consideration that would be publicly available for students.

1.2.4. LiepU has developed procedures that determine the way the annual surveys take place and collects statistical data on the number of students, enrolled students, graduates, academic staff on October 1 whose analysis results are included in the self-assessment report for the study field (SAR, p.31-32., meeting with the head of department and study program directors). The annual self-assessment reports of the study field analyze the study field and its study programmes relevance to the job market demand, information on financial resources for ensuring the teaching of the study programmes appropriate to the study field, and for enabling the research (creative) activities of the academic staff (SAR, p.35).
The Senate analyzes annually the results of the Admissions, and conducts a Scientific Activity Assessment and a Financial and Economic Activity Analysis. (SAR, p.35)

During the experts' visit, the teaching staff mentioned that a general survey of students' satisfaction with the work of the teaching staff and the studied course is conducted in the spring semester, which was made mandatory to all LiepU students last year and will be held each academic year. Students' feedback is collected upon completion of the course but before the course grades are

made known to the students (meeting with the head and study program directors). The results of the survey are available in the LiepU Quality Management System (QMS) (SAR, p.31-32.). Survey answers, comments, recommendations are analyzed by the teaching staff, study program and field directors. Additionally, discussions about necessary changes are organized with teaching staff (meeting with the study program directors).

The heads of the final/national examination commissions fill out a survey conducted with the aim to analyze and assess the employer's satisfaction. Questions about student theoretical knowledge, practical skills, and recommendations for further studies and work are included in the internship evaluation form (SAR, p.31-32.).

LiepU conducts an electronic graduate survey every academic year with the aim to find out their opinion about study programs. The survey results are produced for the faculty as a whole and for each of its study programmes, as well as the results are described in the self-assessment report of the study field and in the description of the study programmes. (SAR, p.32)

1.2.5. Information about the bachelor study program Smart technologies and Mechatronics slightly differs when comparing two language versions of the website: English and Latvian. In the English version there is additional information about study courses and study results, while Latvian version of the website provides additional information about Post-baccalaureate and post-qualification opportunities.

There is a lack of information about the study program Computer science in Latvian on LiepU website. The information is available only in English at https://www.liepu.lv/en/48/computer-sciences#.

The information on the Latvian language (https://www.liepu.lv/lv/882/dabas-un-inzenierzinatnu-fakultate) and English language websites (https://www.liepu.lv/en/120/faculty-of-science-and-engineering) does not correspond to the information included in AIKA e-platform: there are inconsistencies in terms of the language of instruction and the number of offered study programs.

The description of bachelor study program "Information technologies" in English has additional information about Compulsory courses, Methods of teaching and learning and Individual planning comparing to Latvian version.

In the description of the master study program Information technologies the information about duration of studies in English and Latvian versions differs. According to the information included in AIKA e-platform and SAR (p.81-84) the duration of the master study program is: 2 years (without qualification), 2 years with qualification Lead software engineer or information technology project manager or 3 years with qualification Lead software engineer or information technology project manager. On the LiepU website English version (https://www.liepu.lv/en/51/information-technology) program duration is stated 2 years with Information Technology Project Manager or Software Engineering qualification, but in the Latvian version of LiepU website and faculty's website there are 3 options: 1 year and 6 month (without qualification), 2 years and 3 years (https://www.liepu.lv/lv/592/informacijas-tehnologija).

In the description of the doctoral study program E-Study Technologies and Management the information about duration of studies and study program director in English and Latvian versions

differs. According to the information included in AIKA e-platform and SAR (p.126), the duration of this study program is: 4 years and director is: Anita Jansone. On the LiepU website English version (https://www.liepu.lv/en/51/information-technology), program duration is stated as 3 years, but the director is Ilma Neimane, ilma.neimane@liepu.lv.

As the information about joint study program Smart technologies and mechatronics is provided also in the website of Ventspils University of Applied Sciences, experts checked it too. The description of the study program [available at https://www.liepu.lv/lv/1267/viedas-tehnologijas] lacks important for students information about lessons conduction in LiepU.

In the VIIS system (viis.gov.lv) there is included information about all programs. The study program codes of three programs does not correspond to the information provided in the SAR and AIKA e-platform: bachelor study program Computer science, bachelor study program Information technologies, master study program Information technologies. The information about bachelor study program Smart technologies and mechatronics corresponds to the SAR.

Information about bachelor study program Information technologies in the VIIS related with study language and qualification does not comply with information included in AIKA e-platform and SAR. In VIIS, program implementation language is mentioned Latvian only, instead of Latvian and English, while qualification is Electronic commerce specialist instead Software engineer.

Information about bachelor study program Computer science in the VIIS related with study language does not comply with information included in AIKA e-platform and SAR. In VIIS, program implementation language is mentioned Latvian only, instead of Latvian and English.

Information about master study program Information technologies in VIIS related with study language and qualification does not comply with information included in AIKA e-platform and SAR. In VIIS, program implementation language is mentioned Latvian only, instead of Latvian and English, but qualification is Information technology project manager instead Lead software engineer or information technology project manager.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The Quality assurance system generally contributes to the achievement of the aims and learning outcomes of the study field and the relevant study programme, as well as ensures continuous improvement, development of the study field and the relevant study programmes, but several improvements are needed.

The procedures for the development and review of the relevant study programmes of the study field and the feedback mechanisms have been defined and they are logical, efficient, and available for stakeholders, except graduates. The feedback to students is provided mostly in mutual form, in separate cases they receive official reply through DVS Namejs. As student delegates are involved in the Study field council which organizes and performs the development and monitoring of the implementation of study programmes of study field, and in different institutions of LiepU, as well as participate directly in the development of regulations, rules, and other regulatory documents, they are able to monitor implementation of above mentioned documents.

LiepU receives feedback from graduates through their survey. But the feedback to the graduates is not provided directly. They are able to familiarize themselves with the annual SA report.

The feedback to the employers is provided mostly mutually during meetings and changes made/implemented can be assessed during the final examinations. In addition, the employer's representatives are directly involved in the development of study programs and they are able to monitor the process and receive immediate feedback.

LiepU has established the mechanism developed for submission of student complaints and suggestions, that promotes the implementation of improvements. Students are informed about such opportunity and receive feedback. However, there is a lack of procedure description for submission of student complaints and suggestions and their consideration that would be publicly available for students.

The statistical data collection mechanism established by LiepU is efficient, ensures regular collection and analysis of information (statistics) on the study programmes corresponding to the study field. The mechanism for obtaining and providing feedback, including from students, graduates and employers, is effective and focused on the improvement of the study field.
The information published on the website of LiepU about the study programmes corresponding to the study field differs from the information available in the official registers (VIIS and E-platform).

The information published in LiepU website mostly provides applicants and students with important information that is published in both languages of implementation of the study programme, but some important documents still need to be translated into english.

Information about the joint study program provided in the VentU webpage does not include relevant information for students about lessons conduction in LiepU.

Strengths
1. LiepU FSE actively cooperates with various state organizations (Liepaja City Council Agencies, RTU, Ventspils University of Applied Sciences), leading national and local IT companies, manufacturing companies in Liepaja, its surroundings, and in Kurzeme municipalities, and with professional organizations in order to promote the development of the field of study and study programs.
2. Student delegates are involved in the development and monitoring of the implementation of study programmes of study field, and in different institutions of LiepU, as well as participate directly in the development of regulations, rules, and other regulatory documents
3. The employer's representatives are directly involved in the development of study programs that enables obtaining of suggestions and recommendations from representatives, the opportunity to use their experience in real projects when developing a study field and study programs that meet the needs of the market.
4. LiepU has established internal regulatory documents, which define the procedure for the development, review and approval of study programs and study courses/seminars, as well as the procedure for implementing their changes.
5. The Faculty has established a well organized procedure for the thesis development and development process control.
6. The statistical data collection mechanism established by LiepU ensures regular collection and analysis of information.

Weaknesses
1. The quality policy and Quality manual of Liepu lacks relevant information.
2. Regulatory documents, which define the procedure for the development, review and approval of study programs and study courses/seminars, as well as the procedure for implementing their

changes are created in the form of diagrams, which define the steps/phases to be taken and those involved, as well as the templates to be used. They lack precise information about the deadlines for starting and completing work and the recording/entering of information into the internal system, explanation of the difference between significant and non-significant changes.

3. Programs of study courses lack the uniform style of results description, the connection between the defined independent works and the requirements for obtaining a ECTS, description of the final grade calculation/forming, the indication of the test form for evaluation of each achievable result.

4. There are regulation documents which were approved more than 10 years ago.

5. LiepU lacks publicly available description of procedure for submission of student complaints and suggestions, and their consideration.

6. The information about offered study programs on the faculty websites in English and Latvian languages differs and does not correspond to the information included in AIKA e-platform.

7. The information about study programs of study field on VIIS do not comply with SAR and AIKA e-platform.

8. Not all documents important for students are translated in English language.

Assessment of the requirement [1]

1 R1 - Pursuant to Section 5, Paragraph 2.1 of the Law on Higher Education Institutions, the higher education institution/ college shall ensure continuous improvement, development, and efficient performance of the study field whilst implementing its internal quality assurance system:

   Assessment of compliance: Partially compliant

   Internal quality assurance system has procedures, but their description lacks important information, some regulatory documents have not been reviewed for a long period of time (see weaknesses list of section 1.2.)

2 1.1 - The higher education institution/ college has established a policy and procedures for assuring the quality of higher education.

   Assessment of compliance: Partially compliant

   The quality policy and Quality manual of Liepu lacks relevant information (see Analysis of subsection 1.2.1.)
   Regulatory documents, which define the procedure for the development, review and approval of study programs and study courses/seminars, as well as the procedure for implementing their changes are created in the form of diagrams, which define only main steps/phases to be taken and those involved, but lack precise information about the deadlines for the work to be done and the recording/entering of information into the internal system, explanation of the difference between significant and non-significant changes

3 1.2 - A mechanism for the development and internal approval of the study programmes of the higher education institution/ college, as well as the supervision of their performance and periodic inspection thereof has been developed.

   Assessment of compliance: Fully compliant

   LiepU has established procedures for the development and internal approval of the study programmes available in internal system, organized the Study field council responsible for the content, the quality and monitoring of study programmes of study field.
   The Faculty council, Council of Study Field and director of the study field, directors of the study programme provide the internal study field. The director of a study programme and the involved academic staff of study programmes are involved in the assurance of the internal quality of study programs.

4 1.3 - The criteria, conditions, and procedures for the evaluation of students' results, which enable reassurance of the achievement of the intended learning outcomes, have been developed and published.

Assessment of compliance: Partially compliant

Programs of study courses lack the uniform style of results description, the connection between the defined independent works and the requirements for obtaining a ECTS, description of the final grade calculation/forming, the indication of the test form for evaluation of each achievable result (see subsection 1.2.1. and 1.2.2.).

5 1.4 - Internal procedures and mechanisms for assuring the qualifications of the academic staff and the work quality have been developed.

Assessment of compliance: Partially compliant

LiepU has developed three mid-term planning documents, directed towards the LiepU human resources development:
LiepU Human Resources Development Plan 2018-2023, The Action Plan of LiepU Academic Staff Development 2018-2022, The Training Plan of LiepU Management Staff 2018-2021 that is not applicable to the academic staff.
LiepU has established regulations for election and evaluation of academic staff where the requirements for candidates are indicated, for example, Regulations on elections in academic positions,
Regulations on the elections of professors and associate professors, evaluation procedures and professors' councils at the University of Liepāja. However, there is missing the employee motivation system and further professional development activities after 2023.

6 1.5 - The higher education institution/ college ensures the collection and analysis of the information on the study achievements of the students, employment of the graduates, satisfaction of the students with the study programme, efficiency of the work of the academic staff, the study funds available and the disbursements thereof, as well as the key performance indicators of the higher education institution/ college.

Assessment of compliance: Partially compliant

LiepU has developed procedures that determine the way the annual surveys take place and collects statistical data on the number of students, enrolled students, graduates, academic staff on October 1. A general survey of students' satisfaction is conducted in the spring semester.
The heads of the final/national examination commissions fill out a employer's satisfaction survey. Employer's representatives fill out the internship evaluation form at the completion end of internship.
LiepU conducts an electronic graduate survey every academic year.
The annual self-assessment reports of the study field analyze the study field and its study programmes.
But It is still necessary to improve the involvement of students in making decisions related to the development of the study program, or more precisely in the analysis of student feedback.
see analysis of subsection 1.2.4. and 1.6.

7 1.6 - The higher education institution/ college ensures continuous improvement, development, and efficient performance of the study field whilst implementing its quality assurance systems.

Assessment of compliance: Partially compliant

In order to make a continuous improvement and efficient performance of study field and relevant study programmes, LiepU has established the Council of Study field.

There have been established institutions and designated officials - The Faculty council, Council of Study Field, director of the study field, as well as directors of the study programme that work together and are responsible for ensuring the continuous development, efficient performance and improvement of the study field.

The fields of study under the supervision of the faculty are evaluated and monitored at the meetings of the Faculty Council, at the general meetings of the faculty, and in the work groups of the teaching staff in the field of study. The results of student course questionnaires, as well as the opinion of employers' representatives, are discussed at these meetings. However, experts recognized that students opinion on these

questionnaires, as well as the individually focused attention in the case of some specific courses, are not taken into account.

1.3. Resources and Provision of the Study Field

Analysis

1.3.1.According to SAR, HEI has established the system for determining and redistributing the financial support required for the implementation of the study field and the corresponding study programmes:

1. (SAR, p.37) Study programmes are financed in accordance with the cost of the study programme set by the Cabinet of Minister. (Cabinet of Ministers' Regulation No 994 of 12.12.2006. "Procedures for financing higher education institutions and colleges from state budget funds").

2. (SAR, p.37) The amount of tuition fee and the payment procedure for each academic year shall be determined and approved by the LiepU Council. Students can choose an individual payment schedule according to their financial possibilities. In order to increase the number of students, LiepU offers tuition fee discounts and implements various promotions through its marketing and sales strategy.

3. (SAR, p.39) The largest expenditure line is salaries, with a relatively high share of salaries of teaching staff and royalties paid for teaching courses and maintaining content (74%).

4. (SAR, p.40) Overall, the cost structure is considered optimal and in line with the development strategy.

5. (SAR, p.41) The Director of Finance and Personnel ensures that the persons preparing the budget shall act in accordance with the instruction "Planning, Execution and Control of the Liepaja University Core Budget" during the budget planning and execution process . Budget planning is carried out in accordance with the QMS procedure A-2-1 "Core Budget Planning", and execution and control in accordance with procedure A-2-2 "Execution and Control of the Core Budget"

According to SAR, HEI obtains funding for scientific or applied research from several sources:

1. (SAR, p.40) Funding for scientific research comes from several sources: Basic funding for scientific activities granted by the Ministry of Education of the Republic of Latvia (according to the Cabinet of Ministers Regulation No 1316 "Procedure for calculating and granting basic funding to scientific institutions".

2. (SAR, p.40) For maintenance of elected scientific staff, scientific infrastructure, as well as partial provision of research work for academic staff: professors, associate professors and lecturer who perform scientific work), Performance funding, funds raised in a competitive procedure (internal grants, project co-financing, projects), as well as the Scientific Activity Development Fund of the Liepaja University.

3. (SAR, p.40) For the support of scientific activities of the academic staff involved in the field of study, funding is allocated from the development budget of the LiepU Faculty of Natural Sciences and Engineering and the LiepU Scientific Activities Development Fund.

SAR (p.40) describes the sources of funding, without explicating whether there is a system in place. The report implies that 100% of funding requests for scientific research activities are funded: "Academic staff applications for scientific publications and conferences are reviewed and approved by the Faculty Council."

During the meeting with the academic personnel, the Experts Committee (EC) received indications that not 100% of applications for funding research activities is approved. Approval of applications is a competitive process, the outcomes of which determine such factors as availability of funds and qualitative evaluation of the goals and outcomes of the application against the goals of the academic unit (faculty/institute).

SAR does not provide explications/answers to the question, whether the system for funding scientific and / or applied research is effective.

Based on answers obtained during the EP meetings with the faculty and the administrative management staff of LiepU:
- The system is sufficiently effective in providing support for printing/publishing of scientific works and conference attendance/travel.
- The system is NOT effective in providing incentives for academic personal to publish. Neither bonus nor incentives systems are in place to support the production of scientific research leading to publishing of its results or for career path of the academic personnel.

The experts can conclude that the system is only partially effective.

1.3.2. According to SAR (p.39), there are the infrastructure resources and material and technical support necessary for the implementation of the study field in place:
"The second largest expenditure item is maintenance of buildings and premises, as well as expenditure directly related to student support and services, marketing costs and other technical maintenance costs, which are regularly reviewed and optimised, prioritising an easily accessible and enjoyable learning environment for students on site. Expenditure on the purchase of literature, periodicals and subscriptions to electronic databases is included in the overall core budget of LiepU. All study programmes are provided with study and research resources in the LiepU library."

According to SAR (p.39), the "the cost structure is considered optimal and in line with the development strategy."

The infrastructure equipment and resources, enlisted in SAR (p.42-43), appear to be relevant and adequate for the implementation of the study field.

However, SAR presents only the "haves" but not the "need to haves" - the needs for support infrastructure are not presented. Neither is there an estimate presented for how long these "haves" will be able to adequately support the implementation of the study field, given the depreciation and outdating of software and hardware resources.

According to SAR (p.41), "Every calendar year LiepU and LiepU Student Council, in order to support and promote the activities of student self-government, renew the cooperation agreement and determine the allocated funding from LiepU basic budget, which is not less than one two-hundredth of the annual budget, in accordance with Article 53 of the Law on Higher Education Institutions."

Based on answers of students during the visit, students in general are satisfied with the material

base and other forms of support available at LiepU.

During the Expert Committee meeting with HEI program director, the following answers were obtained to the question whether there is any support for the academic staff to purchase equipment:
- funds to buy equipment for laboratories - ca. 4000 Euro/annum;
- funds to develop programs - ca. 3000 Euro/annum;
- funds to support study process – e.g., for students' travel to VeA or to attend conference - ca. 2000 Euro/annum;
- funds to support research activities - e.g., conference publishing and travel support - ca. 4000 Euro/annum.

Based on answers of teaching staff to the Expert Committee, the available resources are not universally optimal. Specific cases mentioned were lack of support for purchase of laptops for the teaching staff, including from staff who are at the same time PhD students at the HEI.

SAR (p.39) explicates the budget planning procedure (as quoted in 1.3.2. above), but does not provide an answer to the question whether there is a unified system and procedures for the improvement and purchase of material, methodological, informative, etc. provision.

During the meeting of the Expert Committee with HEI administration, answers were obtained indicating there are certain procedures in place for purchase of library resources, software resources, etc. However, no indications were given for these procedures to be consolidated or coordinated under a unified system.

1.3.3.According to SAR (p.43), "The Liepaja University library offers a support to Liepaja University students and teaching staff in the process of their studies and research... The library develops its collection and offers services in the pursuit of its objectives."

According to the Liepaja University Library Statute, "the objectives of its activities are to support the study process and scientific activities with printed, electronic, and other documents, and to function as a cultural centre that promotes national and regional cultural values."

Further, SAR (p.46) presents "Procedures for making additions to the library collection and subscribing to databases": In accordance with LiepU QMS procedure A-10-II 'Building the library collection', instructors fill in the 'Request to expand the collection of the library, for the LiepU Library Expansion and Processing Unit'.

During the Expert Committee meeting with the academic staff, affirmative answers were obtained for the question whether or not the academic staff has a possibility to purchase books and other informative resources.

SAR (pp.43-46) presents in detail what library resources and databases are available to students. During the Expert Committee's tour to the HEI facilities and the library, the Experts had a possibility to verify and confirm the availability of the needed for the implementation of the Study field informational resources.

1.3.4.According to SAR (p.47), on February 3, 2020, HEI has made it mandatory for the academic staff and students of Liepaja University to use the e-learning environment Moodle in the study process.

SAR (p.47) reports on special training of academic staff aimed at developing "modern understanding of the academic staff regarding the challenges of the digital age" to have taken place during March-June, 2022, within SAM project No. 8.2.2.0/18/I/003.

The training contained three thematic parts: 1) digital teaching aids; 2) Moodle; 3) Microsoft Teams.

During the meeting of the Expert Committee with students, complaints were received on poor organization of course materials in the Moodle system, poor communications with select lecturers, especially those involved in the joint study program between LiepU and VeA.

One of the reported reasons for poor communications was the absence of the common for two HEIs e-learning environment (Moodle or other). I.e., each HEI maintains its own Moodle system, making it difficult for students of the joint program to follow the presentation of information on the program.

During the Experts Committee's visit to the HEI's facilities, organization of the study content in the Moodle system was examined. HEI's Moodle system appears indeed to be in use by the teaching staff and students. However, specific issues were identified:
- Information on availability of IT and Methodological support for Moodle is provided in Latvian only, despite the fact that ca. 30% of students are foreigners in full-time English language programs
- The amount of information presentation may vary when the same course is taught in Latvian and English. For example, course description was missing for English language course, while it was given for Latvian language course.

Experts sought an answer from students and the teaching staff to the question whether the IT tools are appropriate and effective. Contradictory responses on the appropriate/effective use of information and communication technology solutions to support study process were received. Academic staff responses were assuring of effectiveness of the information and communication technology solutions. Students expressed general satisfaction with specialisation-specific IT/IS tools, which are required (prototyping, modeling, programming, etc) for the implementation of the Study Direction. However, substantial critique was voiced by students:
- the study materials in the Moodle system are often poorly organized, outdated;
- the information on courses schedule is unreliable;
- communication by electronic means with teaching personnel is problematic, especially with the teaching personnel of Ventspils University College (VeA);
- some specialized software tools (systems) used for teaching programming are outdated.

Neither the students nor the teaching staff were able to answer the Experts' questions on existence of a system for assessment of effectiveness of use of the Moodle system.

It was brought to the knowledge of the Expert Committee that MS Teams are used for implementation of distance learning. The Expert Committee has not received evaluation of effectiveness of this solution.

1.3.5. SAR (pp.47-49) presents the normative description of the requirements and the hiring process.

During the Expert Committee's meeting with academic staff, it was found out that a large percentage of teaching personnel has a second job outside of university, which has negative implications for availability of time for preparation for and implementation of teaching, engaging in research, among other.

The management of LiepU and the academic staff understand the concept of "qualified staff" in terms of fulfilling the normative requirements for the position, not in terms of high scientific or pedagogical qualifications.

During the Expert Committee's meeting with students, concerns were heard on lower-than-desired qualifications of teaching staff.

SAR (pp.48-49) presents the normative description of the requirements and the hiring process. An URL for "the regulations governing the recruitment and/or employment of instructors" is provided (SAR, p.48), with a note that the regulations are available in Latvian only: https://www.liepu.lv/lv/181/darba-iespejas . The link does not lead to the regulations. Instead, the opened website enlists vacations.

SAR (p.48) reports that the requirements set for the candidates for a teaching position are set in accordance with the Liepaja University 'Regulations on elections to academic positions', as the following:
- the person must have a doctoral or master degree in a relevant or related field of science,
- the person must have research/creative work experience,
- the person must have publications/creative works in a relevant or related field of science,
- the person must have experience in the development or improvement of teaching materials,
- the person must have good command of English (at least B1, B2, C1 according to the Europass self-assessment framework),
- the person must have the ability to apply language skills in studies and teaching, have good digital skills according to the Europass self-assessment framework, and have knowledge of new technologies.

It can be assumed that these rules/procedures are being followed.

Unclear is one the requirements specified on p.48 of SAR for the professional qualifications of academic staff : "At least 5 years of professional activity relevant to the course to be taught." What is understood by "professional activity" and why "at least 5 years" of it are required is unclear. Especially in the light of new hires, e.g., fresh PhDs.

Reading the requirements for attracting qualified staff, as laid out in SAR, and having asking the representatives of the LiepU management during the Expert visit, it can be concluded that the management of LiepU and the academic staff understand the concept of "qualified staff" in terms of fulfilling the normative requirements for the position, not in terms of high scientific or pedagogical qualifications.

According to SAR (p.58), all information on qualifications and hiring is available only in Latvian, also when specifically targeted to foreign staff: "Application, selection procedure and criteria for foreign academic staff (according to the Academic Staff Development Plan, page 39; Latvian only)." At the same time, according to SAR (p.48), when an open competition is organised for the selection of doctoral students and scientific degree candidates, announcement is published on the European Commission portal Euraxess (in Latvian?) as well as on the Ministry of Education and Science website izm.gov.lv.

Some requirements appear to be ambiguous and need further clarification from the management of HEI. So, according to SAR (p.49), there is a particular requirement, which precludes hiring fresh PhDs (just-defended):

"the person must have been employed in an academic position at an accredited foreign higher education institution within the previous five years,.."

SAR does not provide information on either who are the stakeholders, nor whether the stakeholders are being informed about the procedures for attracting qualified teaching staff.
During the Expert Committee's meeting with employers and LiepU graduates, it was brought to the Experts' knowledge that a close collaboration exists between HEI and its partners in terms of attracting new (qualified) teaching staff.

1.3.6. According to SAR (p.50), "The LiepU Human Resources Development Plan for 2018–2023 assesses the current situation, defines the objectives, tasks, and deliverables for the human resource management processes", and efforts / program for maintaining teaching quality is in place. According to SAR (p.51), "The aim of the LiepU Human Resources Development Plan is to provide Liepaja University with the necessary human resources, to facilitate the development of existing human resources (academic and other staff), professional growth and improvement, inclusion of new teaching and research staff in the university education and research process, to provide modern, development-oriented studies, research, lifelong learning, in accordance with the LiepU Development Strategy."

According to SAR (p.51), "The Liepaja University Academic Staff Development Plan for 2018–2022 is a plan for developing and hiring staff, which defines and describes the planned activities for the improvement of academic staff competence, hiring, and growth." According to SAR (p.51), "The aim of the Liepaja University Academic Staff Development Action Plan for 2018–2022 is to improve the competences and skills of the Liepaja University academic staff, to facilitate the growth of the staff, and to promote Liepaja University activities, in accordance with quality requirements."

There is also LiepU Management Staff Training Plan for 2018–2021, which, according to SAR (p.52), defines and describes the expected competence development activities for management staff: "The LiepU Management Staff Training Plan objectives are: increase the competences and skills of the LiepU management staff for capacity in management, for process management, for having a management team with a vision of a modern, competitive international university that understands global trends, a management team that can inspire students and staff for rapid and ambitious growth."
At the backdrop of the aforementioned Human Resource Development, Academic Staff Development, and Management Staff Training plans, during the Experts' meeting with the academic staff and LiepU management, answers were received indicating the absence of a program for career path development or scientific skills development (publications, project funding applications writing).

According to SAR (p.51), "The Liepaja University Academic Staff Development Plan for 2018–2022 is a plan for developing and hiring staff, which defines and describes the planned activities for the improvement of academic staff competence, hiring, and growth."

However, during the Experts' meeting with the academic staff and LiepU management, answers were received indicating the absence of a program for career path development or scientific skills development (publications, project funding applications writing).

Given the dissent of the opinion of academic staff and the normative view of LiepU, as reported in SAR and supported by Human Resource Development, Academic Staff Development, and Management Staff Training plans, The Experts' came to the opinion that the effects of implementation of the three development plans have not been communicated to the academic and

management staff.

According to SAR (p.50), "The development of professional qualifications among the teaching staff is in compliance with the LiepU quality management system rules and criteria, which are monitored and provided with feedback by the head of the field of study, the head of the programme and field of study council."

SAR (p.50) defines the criteria used to monitor the quality of instructor work are as follows:
-student evaluation (LiepU QMS questionnaire);
-instructor self-assessment (LiepU QMS questionnaire);
-indicators for the evaluation of study internships (QMS internship evaluation questionnaire);
- effective participation in activities intended to improve didactic competence, including the preparation of didactic seminars, class visitations, participation in lifelong learning, etc.

During the Experts' meeting with the academic staff and LiepU management, no information was provided to the Experts on the "appropriate improvement measures".

1.3.7.SAR does not provide information on measures or system for ensuring/evaluating workload balance.

During the Expert Committee's meeting with the management of LiepU, no answers were given to the question of what is the normal/optimal/expected distribution of workload between research, teaching and administration.

The responses received from the teaching staff indicate that:
- a large percentage of teaching staff has second (sometimes also primary) job outside of the university;
- there is a commonly acknowledged systematic lack of time for engaging in scientific research;
- academic staff capable of producing research output has a possibility to balance the teaching and research workload by combining teaching position at the HEI with the research position at HEI's ISIT institute.

1.3.8. According to SAR (p.41), "every calendar year LiepU and LiepU Student Council, in order to support and promote the activities of student self-government, renew the cooperation agreement and determine the allocated funding from LiepU basic budget, which is not less than one two-hundredth of the annual budget, in accordance with Article 53 of the Law on Higher Education Institutions."

Further, according to SAR (p.54), "students can apply for various types of scholarships, such as the Senate scholarship or a one-off semester scholarship."

During the Experts Committee's meetings with students, answers were received affirming the availability of various forms of support.

However, the Experts came to the conclusion that there is no proper system in place for dissemination of information on possible support forms:
- There is no centralized information point on the website;
- the administrative staff uses different channels and formats to inform students on the availability of support.

As a peculiar example, the management of LiepU in a meeting mentioned the availability of support for (students-) young mothers. At the meeting with students in which one of the students presented herself as a young mother, the particular students answered not being aware of the availability of such support form.

According to SAR (p.54), there are various forms of support, adequate and relevant to the possible issues.

Adequate and relevant support system is in place if considered as a range of available support forms for students.

However, information on the availability of various forms of support in not systematized nor is there a formal system or procedures in place to define the format, frequency, and channels for the presentation of this information to students.

Conclusions on this set of criteria, by specifying strengths and weaknesses

Overall, while HEI is following the procedures for acquisition and use of resources as defined by relevant legislative norms, there appears to be no system in place for evaluation of whether or not the use of the resources is appropriate and effective.
Administrative procedures exist that were required by law for procurement/hiring/support, but there are no visible (nor implemented) systematic efforts for the improvement of human and technical resources.

Strengths
1. Support mechanisms exist for the academic staff participation in conferences, publishing;
2. Support mechanisms exist for the academic staff to participate in Erasmus+ mobility programs;
3. Adequate informational resources available to the academic staff and students: the Internet, library resources (electronic and physical);
4. Adequate, versatile laboratories and computer rooms to support the study process, including the provision of licensees for software required for/used in the study process;
5. Transportation for students involved in the joint study program with VeA is organized and paid by HEI.

Weaknesses
1. No career planning system seem to exist;
2. No system for incentivizing the development of scientific qualifications seem to exist;
3. Poor communications system for dissemination of funding- and studies-related information to students:
- too complex - too many different channels, threads;
- too disorganized - no systematicity, no uniformity;
- missing content in English despite ca. 30% of foreign students.
4. Presentation of course and methodological information in the Moodle need better structuring, uniform presentation, equal informational content in Latvian and English, where relevant:
- information for students of the joint program (between LiepU and VeA) is split between the two HEIs' Moodle systems.
5. Insufficient support for the equipment acquisition/purchasing for teaching and study purposes;
6. Students under-utilize the capabilities of the library; the teaching staff efforts fall short of properly advertising the use of the library resources:
- course descriptions do not have direct references to books and other resources available

in/through the library;

- students complain on non-availability of teaching books, while those books may be/are readily available in the library.

7. Some courses were found where the main textbook is available in the library in 1 copy only:

- the teaching staff does not consult with the library on optimal choice of resources for the course.

8. No program renewal committee exists for balancing the requests/deands of the industry partners on curricula development against the academic goals and demands of the HEI;

9. Diminishing quality of research publications:

- research output is counted in numbers, not evaluating its quality;

- a "pocket" conference organized annually, providing easy publications opportunities for the academic staff, but not providing incentives for research output quality development;

- lecturers do not understand the concept of research beyond the fact that they are required to publish. No time, no other motivation exist then keeping their job, no bonus/incentives system.

1.4. Scientific Research and Artistic Creation

Analysis

1.4.1. Liepaja University Development Strategy for 2016–2020 (prolonged until 31st December 2023) emphasizes the importance of science and scientific research in its mission, overall goal and objectives (SAR, p.5). One of the three objectives of the University is: "to carry out applied and fundamental research, and to transfer knowledge and technology to the relevant sectors of the economy..." (SAR, p.5). Quality Policy of LiepU (SAR, p.5) also notes that professional and academic activities are "based on research, necessary for the region, competitive and qualitative on Latvia and international scale". It is also noted in the SAR (p.16,) that LiepU is a center for science in the Kurzeme region, which provides competitive, nationally and internationally significant studies necessary for the development of the region, implements study-related, nationally and internationally recognised research, and promotes sustainable growth of society". Its main goal is "to provide research-based, high-quality higher professional, academic and lifelong learning opportunities that are relevant to the region and competitive in Latvia and internationally, promoting the development of a knowledge-based and professional competence-based economy, and promoting a creative, culture-focused society" (SAR, p.16).

The development strategy of the Information Technology, Computer Engineering, Electronics, Telecommunications, Computer Management, and Computer Science field of study is aligned with the strategic planning documents of the University (SAR, p.16). It is also said that scientific research at the faculty is carried out in accordance with the Liepaja University Research Activity Strategy for 2015-2020 which sets the medium-term strategic goals indicating that the research topics are in line with the national priorities, internationally relevant research areas, and regional development needs; the LiepU research institutes and faculty research groups represent creative teams performing national and international collaborative research, forming a national and international network for the implementation of research projects in relevant research topics; LiepU has interdisciplinary research groups solving complex scientific problems in cooperation with Latvian and foreign universities and businesses, which are involved in obtaining funds from national and international projects to achieve their results; and the collaboration between research and business is supported. It also aims at publication of research results at international level, and at inclusion of Liepaja University scientific journals and magazines in internationally recognized databases (SAR, p.55). All references indicate that scientific research is given central place and high priority in all strategic documents of the University. This interpretation was confirmed during the interviews with the University management.

Thus, the University and the study field have clearly identified research among its priorities and strategic goals; the study field complies with the development aims of the University. However, although the University is willing to become a research-led institution in its strategic goals, no clear implementation plan and evidence to achieve such a level was found. While the University has implemented systems of quality assurance and continuous quality improvement for its educational programmes, in relation to its research activities such systems were found to be underdeveloped, with limited formalized control. Stakeholder involvement in research activities is also generally limited. Thus, the University has partly implemented a policy of promoting research excellence. The academic staff needs more input than the baseline to achieve a higher research standard.

1.4.2. SAR (p.57) states that scientific research is integrated in the teaching and learning process of the study programmes. The completed research, publications and participation in various research projects by academic staff help to improve and update the course content and support the development of students' research skills. The academic staff have initiated various research activities in their courses according to their research interests in the field. Doctoral students, master students and students of the field of study Information Technology, Computer Engineering, Electronics, Telecommunications, Computer Management, and Computer Science are actively involved in research activities, working in projects and participating in conferences; their results are reflected in study projects, course papers, bachelor theses, diploma projects, master and doctoral theses, and in the content of study courses. Every year, the Faculty of Science and Engineering of LiepU organizes scientific readings for students and master students. During the COVID-19 pandemic in 2020 and 2021, the conference was held remotely using Microsoft Teams. Several students of the field of study have successfully participated in creative and research competitions during the reporting period (SAR, p.57).

In addition, the study programmes include interdisciplinary theoretical courses which are designed to provide an in-depth understanding of the general theoretical framework, research methodology and the structure of the thesis (SAR, p.134).

These statements above were confirmed during the interviews with students, staff and graduates. The students are involved in scientific research through project- and problem-based learning activities and the opportunities are provided to present their research in conferences. Lecturers of the study programmes promote students to take part in practical studies and development projects. Thus, it was evidenced that students of the study programme were involved in scientific research in a variety of areas of the study programmes and the University has developed mechanisms to promote the involvement of the students in scientific research that seems to function well.

1.4.3. It is stated in the SAR (p.62) that scientific research is carried out through various European Union Framework Programmes and other international R&D projects. The most important national and international research projects carried out during the reporting period are listed in Table 2.4.3.1. (SAR, pp.62-64). The main cooperation partners are Vidzeme University of Applied Sciences, Riga Technical University (RTU), University Politecnico di Torino, Institut National de Recherche Pour L'Agriculute, and L'Alimentation et L'Environnonnement (INRAE) (SAR, p.65). It is mentioned that "The project benefits have been used in the study projects of the bachelor programme Mechatronics and have formed the basis for new study projects in the bachelor programme Smart Technologies and Mechatronics" (SAR, p.64). The interviews with the academic staff and analysis of the publications of the academic staff confirmed that international cooperation in the field of scientific research is still quite modest.

1.4.4. SAR (p.65) notes that the University provides opportunities to engage in interdisciplinary

research, applied research, and collaborative projects, as well as challenges in their implementation and for cooperation. The university's system for allocating funding contributes to this support. The teaching staff told the expert group that the University effectively supports attendance to conferences, stays in other institutions (including abroad), and that it provides adequate resources for these purposes.

The interviews with the management and academic staff confirmed that the University has not developed a clear implementation plan to achieve the status of a research-oriented institution. It seems that the main goal is to engage students in research, rather than focusing on high-level research, that is, how to contribute to nationally and internationally recognized research.

The University has not yet developed sufficient mechanisms for the involvement of teaching staff in scientific research. It seems that only publishing (in outlets indexed by Scopus and/or Web of Science) counts, not applying for and receiving research projects, organizing research conferences and workshops, reviewing doctoral theses at foreign universities, being a member of the editorial boards of pre-reviewed international journals, reviewing research articles in research journals, etc. In the field of open science, the focus is only on involvement in open science initiatives, but not on supporting faculty in research data management (e.g. creating data management plans).

The University and the study field do not have an accurate and reliable system for recording the research results of the academic staff. For example, SAR enlisted questionable publications of some of the researchers - Experts were not able to verify them. Some researchers have publications in outlets indexed by Web of Science, but these are not reflected in the SAR's publication list. The research production of the study field is rather modest (the only two researchers have h-index in the Web of Science 6 and two have 5, all others have much lower or non-existent; in the Scopus it is a bit higher, but not too much). The motivation of the academic staff to contribute to the research activities is not effectively supported and there are no clear mechanisms for their involvement. Ratio of academic and research workload of academic staff is an obstacle for scientific research and perhaps also for methodological and technological innovation.

Thus, the Expert group finds no strong evidence of a system of institutional level recognition and support to engage teaching staff in scientific research. Mechanisms to ensure an efficient operation of research activities are not well developed and systematically monitored. While the importance of research is clearly in evidence in the institution's strategic goals and there is a broad awareness among the academic staff of the importance of research, this is not clearly translated into an apparent awareness of the importance of achieving the highest quality outputs. As a result, the research efforts do not fully make an intellectual contribution to the institution's reputation. They have an institutional conference where students and staff can publish their research results, but the quality criteria for accepting high-quality publications are not clearly set.

1.4.5. It was evidenced that the students of the study programmes were involved in scientific research in a variety of areas of the study programmes and the University has developed mechanisms to promote the involvement of the students in scientific research that seemed to function well. The students are involved in scientific research through project works and their final theses writing projects. Lecturers of the study programme promote students to take part in practical studies and development projects, and present their research and study results at the Student Scientific Conferences (SAR, p.66). These statements were confirmed during the interviews with students and staff.

SAR (p.65) notes that academic staff integrate the results of their research and creative activities in

the study process which enables the improvement of the content of study programmes and promotes research activities among the students and that the research activities of the instructors are included as an innovation in the content of study courses. Nevertheless, according to the interviews with students, several courses were quite outdated and needed content that corresponds to modern development trends (e.g. machine learning, programming).

1.4.6. SAR does not provide specific examples of innovation. The main innovation is considered to be the integration of the research activities of academic staff in the study process and providing research topics and research activities related to current national and regional issues in data processing, software engineering, and technology applications. Student involvement in assessing research and internships already carried out as part of the study programme and cooperation with companies providing internships are presented in the section of innovation (SAR, p. 67). The interviews with management, academic staff, students and graduates did not indicate that innovative solutions (product, process, performance, organizational, methodological, technological innovation, etc.) are extensively implemented in the study process despite the fact that e-learning is a field of study in the study field - no innovation in the use of learning methods or technology stood out – innovative learning design models, learning analytics, open digital badges, use of available functionalities of the learning management system Moodle, online whiteboards or possibilities of artificial intelligence.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The directions of scientific research in the study field comply with the development aims of the higher education institution and they are relevant to the study field and the relevant industry. The relation between scientific research in the study field and the study process has been defined. Scientific research is integrated in the study process of the study programme. The University has developed mechanisms to promote the involvement of the students in scientific research. International cooperation in the field of scientific research within the study field takes place to a certain extent. The University has not yet developed mechanisms for the involvement of the teaching staff in scientific research. Innovative solutions are implemented in the study process only to a small extent.

Strengths:
1. The University and the study field have clearly identified research in its priorities and strategic goals.
2. The directions of scientific research of the study field comply with the development aims of the University.
3. The directions of scientific research are relevant to the study field and the relevant industry.
4. Scientific research is included into the study process of the study programme.
5. The University has developed mechanisms to promote the involvement of the students in scientific research.
6. Students develop research skills through various courses, project-based activities and final thesis and have opportunities to present their research in the Student Scientific Conferences.
7. The University supports attendance of academic staff in conferences, publishing and provides resources for these purposes.
8. Competencies of academic staff of the study field are generally high, but there are exceptions.

Weaknesses:
1. The University has not developed a clear implementation plan to achieve the status of a research-oriented institution. It seems that the main goal is to engage students in research, rather than

focusing on high-level research, that is, how to contribute to nationally and internationally recognized research.

2. The University has not yet developed mechanisms for the involvement of teaching staff in scientific research.

3. The research production of the academic staff of the study field is modest.

4. The motivation of the academic staff to contribute to the research activities was not identified during the interviews.

5. Innovative solutions are implemented in the study process to a small extent.

6. Ratio of academic and research workload of academic staff is an obstacle for scientific research.

Assessment of the requirement [2]

1 R2 - Compliance of scientific research and artistic creation with the level of development of scientific research and artistic creation (if applicable)

   Assessment of compliance: Partially compliant

   The University has not yet developed mechanisms for the involvement of the teaching staff in scientific research.

1.5. Cooperation and Internationalisation

Analysis

1.5.1. SAR (p.68) describes very clearly the main principles and criteria of selecting partners in Latvia. The main criteria for selecting partners among businesses are: a) the sector of their business, b) previous cooperation and the relevance of the issues to the student; and c) the interest of the companies. The activities through which this cooperation takes place are described in SAR (p.68). The recommendations of cooperation partners are taken into account in the development of study programs (SAR, p.69).

The study field has a very wide network of partners in Latvia; for example, they have built good partnerships with several leading national and local IT companies, manufacturing companies in Liepaja and its surroundings, and in Kurzeme municipalities, and with professional organizations: Emergn Latvia (Exigen Services Latvia), Accenture Latvian Branch, TestDevLab, Microsoft Latvia, MikroTīkls, Tilde, Lursoft IT , Tieto Latvia, Like A Coffee, ProgoTEAM, S-Tec Latvia, IT Līderis, Enters, Fantasyposh Latvia, Highfive, Passive Management, Giraffe360, DEVS.LV, Tet, UPB, SIA Lauma Fabrics, Jensen Metal, AE Partner, LSEZ SIA Lesjofor Springs LV, Silkeborg Spaantaning Baltic, SD Autocentrs, Liepājas RAS, Medzes Components, Advanced Technology Solutions, InPass, 'Ventspils nafta termināls', Donaco, SIA ITQ GROUP, SIA Linedata Services (Latvia), SIA Phone AD, SIA RED CONCEPT, SIA BaltKarts, Liepaja City Council Agency 'Liepājas sabiedriskais transports', 'Kurzemes Biznesa inkubators', 'Ventspils digitālais centrs', Latvian Chamber of Commerce and Industry, Latvian Information and Communications Technology Association (LIKTA), Microsoft IT Academy Program, Liepaja City Council, etc. (p. 69, SAR). The University has also a good collaboration with Riga Technical University (The doctoral programme in E-Learning Technologies and Governance is implemented jointly with Riga Technical University, the researchers of RTU also contribute in the research of the study field). A common system for the provision of internships and the organization thereof has been developed within the study field. The employers are involved in discussing the content of the internship.The internship providers are satisfied with the knowledge and skills of the students of the study programme. The interviews with employers confirmed the good cooperation with the study field.

1.5.2. Internationalization is an important dimension of the University. The LiepU Internationalisation Plan defines the tasks for the internationalization, which includes implementing international study programmes, attracting and selecting foreign students, pursuing international mobility, building international cooperation, and providing an international study environment (SAR, p.69). The LiepU internationalization processes are also promoted through various ERASMUS+ exchange programmes, which expand the opportunities of students to learn from foreign institutions. The University has agreements with 124 partner universities abroad (SAR, p.69). Great support in attracting international partners is provided by the International Relations Department of LiepU (SAR, p.70). The most important criteria in the selection of cooperation partners are their compliance with the specialization of the study field and the compatibility with research interests of the academic staff (SAR, p.71). Due to various ERASMUS+ exchange program activities, students have the opportunity to visit internships in foreign companies (e.g. in France, Germany, Hungary, Italy, Portugal, Spain, Turkey) (SAR, p.71). Academic staff members also use the opportunity to go on mobility events to partner universities abroad (e.g. Bulgaria, Germany, Lithuania, Russia, Spain) (p. 71, SAR). These arguments were confirmed during the interviews with representatives of students, graduates and academic staff.

1.5.3. At the end of 2013 the University received the Erasmus+ charter for a maximum period of 7 years, thus confirming that Liepaja University's international strategy meets the requirements of the European Union (SAR, p.72). The objectives of learning mobility are described in detail in the SAR (p.72). IT students, especially full-time international students, have been actively involved in the Erasmus+ programme for the last 3 academic years. IT students mostly go on internships in foreign companies, and fewer choose exchange studies. The last three years have seen an influx of incoming exchange students, especially from French universities with which LiepU has established active partnerships (SAR, p.73). The activities for attracting international students have been described in detail in SAR (pp.73-74). The University has developed a sufficient system and procedures for the attraction of students from abroad within the study field. However, the attraction of the teaching staff from abroad still needs further attention.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The University cooperates extensively with institutions from Latvia and to a lesser extent abroad within the studyfield, and such cooperation contributes to the achievement of the aims and learning outcomes of thestudy field and the study programmes. The cooperation partners are selected in view of the specific features of the study field and the relevant study programmes. A common system for the provision of internships and the organization thereof has been developed within the study field.The employers are involved in discussing the content of the internship.The internship providers are satisfied with the knowledge and skills of the students of the study programme. However, the University has not developed yet a sufficient system and procedures for the attraction of the teaching staff from abroad within the study field.

Strengths:
1. The University has established good cooperation with institutions in Latvia and such cooperation contributes to the achievement of the aims and learning outcomes of the study field and the study programme.
2. The cooperation partners are selected in view of the specific features of the study field and the relevant study programmes.
3. A common system for the provision of internships and the organization thereof has been developed within the study field.
4. The employers are involved in discussing the content of the internship.

5. The internship providers are satisfied with the knowledge and skills of the students of the study programme.

Weaknesses:
1. International cooperation has not been developed in a systematic way.
2. The level of incoming mobility among teaching staff is low.
3. The system or mechanisms which are used by the University to attract the teaching staff from abroad have not been very efficient.

Assessment of the requirement [3]

1 R3 - The cooperation implemented within the study field with various Latvian and foreign organizations ensures the achievement of the aims of the study field.

   Assessment of compliance: Partially compliant

   The University has established good cooperation with institutions in Latvia and also abroad. Such cooperation contributes to the achievement of the aims and learning outcomes of the study field and the study programme.However, the University has not developed yet a sufficient system and procedures for the attraction of the teaching staff from abroad within the study field.

1.6. Implementation of the Recommendations Received During the Previous Assessment Procedures

Analysis

1.6.1. During the reporting period, not all recommendations of the previous accreditation (19.11.2013) have been fully achieved, but the university's contribution to the fulfillment of these recommendations is visible.

For example, a number of IT master's degree graduates, doctoral students, and researchers have been recruited to increase the proportion of lecturers whose primary education is in computer science. Lecturers have gone on Erasmus+ exchange visits to universities to increase the international experience of teaching staff. The procedure for submitting and reviewing student proposals has been improved and two student representatives have been elected to the faculty council to increase student involvement in making decisions related to the development of the study program. A Study Direction Council has been established, which includes representatives of IT companies, to increase the involvement of employers in making decisions related to the development of the study program.

However, the university itself admits in the report that some of the recommendations have not lost their relevance and have determined the actions to be taken to improve the implementation of study programs for the next reporting period as well. For example, the issue of the number of academic staff members is still relevant. It can also be observed that it is still necessary to improve the involvement of students in making decisions related to the development of the study program, or more precisely in the analysis of student feedback, which was revealed during the visit during the conversations with students.

The recommendations given during the evaluation process of the Mechatronics study program (19.11.2013) are in some cases repeated from what was given during the accreditation. For example, to attract new academic staff who would be able to relieve the workload of lecturers teaching specialized study courses, to involve students in decision-making processes regarding the

development and directions of the study program, to promote the research of the involved academic staff within the framework of the study topic and the mobility of teaching staff.

In some cases, where the recommendation has not lost its relevance, the planned mechanism for its implementation has been provided. For example, a recommendation was made to promote the enrolment possibilities to prospective new students, so that at least the number of students participating in the study process within one course would make the program profitable. The priority direction "Targeted implementation of faculty public relations and marketing" is determined in the development plan of the study field. One of its tasks is to "Involve students, graduates and employees in public relations and marketing activities". The statements of graduates and employers during the visit show that the management of the study field maintains contact with graduates and employers. This indicates their contribution to the implementation of the recommendations.

During the evaluation process of the mechatronics study program, a recommendation was made to provide the material basis for the implementation of study courses in the field of mechanics. The report shows that the recommendation has been taken into account and during the reporting period the study field has worked on the creation and addition of the Prototyping Laboratory and the Mechatronics and Physics Laboratory with new equipment, which some experts managed to see during the visit. It is also recommended to provide more complete teaching in the field of mechanics, and it is mentioned that the number of Mechatronics courses has been increased. However, taking into account the descriptions of the study courses and the mapping to the professional standard, as well as interviews with students, it must be concluded that strengthening the mechatronics part of study programm is still an essential necessity even now.

The report does not provide an overview of how the recommendations given in the licensing of the "Smart technologies" ("Smart technologies and mechatronics") study program were achieved (12.03.2020). It is understood from the study plan that, for example, the following recommendations have been achieved - increasing the number of credit points (at least 6 credit points) in the study course "Production Engineering" and developing the course "Hydraulic and pneumatic drive".

However, from the list of cooperation agreements, it is understood that the establishment of cooperation with Liepāja State Technical College and Liepāja Maritime College for the use of the laboratory base of these institutions has not been implemented.

The experts' recommendations (13.07.2016) on the study program "Information technology" (47481) have mainly been implemented. A mechanism has been created for the development of master's theses, which is confirmed both by the statement in the appendix of the report and also by the statement of the management during the visit. A mechanism for ensuring the compliance of the program with the requirements of the labor market has been developed and good cooperation between the university and the industry has been established, which is also confirmed by representatives of the industry.

In total, out of 17 recommendations for study direction and study programs, these 5 are still essential and need to be improved:
1. Increase the scientific activity of academic staff members (still needs to be improved)
2. To promote the research of the involved academic staff within the framework of study topics and the mobility of teaching staff (partly done, the mobility of teaching staff is improved)
3. Improve the study program plan (Strengthening the mechatronics part of the study program remains a necessity)
4. Involve students in decision-making processes regarding the development and directions of the

study program (still needs to be improved)

5. Promote the attraction of new students, so that at least the number of students participating in the study process within one course would make the program profitable (not fully done, but the planned mechanism for its implementation has been provided).

Conclusions on this set of criteria, by specifying strengths and weaknesses

In general, activities carried out by the management of the study field in order to take into account the recommendations expressed in the previous accreditation and licensing processes are clearly visible. Some of the recommendations have been taken into account fully, but in some cases, despite the activities already carried out, the study field did not manage to fully implement the recommendations.

Strengths:

1. In some cases, where the recommendation has not lost its relevance, the planned mechanism for its implementation has been provided.

2. Considering the previous recommendations the Prototyping Laboratory and the Mechatronics and Physics Laboratory have been created and provided with new equipment.

Weaknesses:

1. It is still necessary to improve the involvement of students in making decisions related to the development of the study program, or more precisely in the analysis of student feedback.

2. Strengthening the mechatronics part of the study program remains an essential necessity.

3. It is still necessary to increase the scientific activity of academic staff members.

Assessment of the requirement [4]

1 R4 - Elimination of deficiencies and shortcomings identified in the previous assessment of the study field, if any, or implementation of the recommendations provided.

Assessment of compliance: Partially compliant

In some cases, the recommendations have been implemented, but not in others. It is still necessary to improve the involvement of students in making decisions related to the development of the study program, or more precisely in the analysis of student feedback. Strengthening the mechatronics part of the study program is still an essential necessity even now.

1.7. Recommendations for the Study Field

Short-term recommendations

1.In the development plan of the study field, clearly incorporate a mechanism to promote the development of teaching staff's publications

2.Make improvements in existing Quality Management system: - supplement regulatory documents which define the procedure for the development, review and approval of study programs and study courses/seminars, as well as the procedure for implementing their changes, with the tasks to be performed (recording/entering of information into the internal system), explanation of the difference between significant and non-significant changes, those responsible, the deadlines for starting and completing the work (the description form is preferred); - ensure publicly available description of procedure for submission of student complaints and suggestions, and their consideration; - regarding study course programs, introduce the uniform style for results description, - supplement study course programs by definition how the defined independent works influence obtaining a ECTS, description of the final grade calculation/forming, the indication of the test form for evaluation of each achievable result; - prepare a regulation that would determine the frequency of revision of different groups/types of documents and review documents that were last updated more than two years ago; - revise and reprocess Quality policy and Quality manual of Liepu by redefining the goal of policy, including relevant information about quality principles in it, as well as including relevant information in the Quality manual: the clearly defined requirements of the quality assurance, activities for ensuring continuous development and evaluating the achieved results in determining the necessary improvements, description of procedures, list of documents with their exact titles.

3.Translate into English all the documents necessary for the study process and publish them on the English language version of LiepU webpage, for example, documents related to the writing study papers.

4.Update information on the DSE faculty's website about offered study programs, present the same content in Latvian and English versions of the website, as well as relevant information publication for the students about the joint study program in the Ventspils .

5. To ensure the publication of up-to-date information in the VIIS system.

6. Develop a system for communication and dissemination of information relevant to study- and living support for students: - explicate which communications/media channels to be used for what kind of information; - explicate the persons responsible for collecting and disseminating the information; - create a single entry informational point for students to provide information on what kind of studies- and living support information is available, where, and who is in charge;

7.Ensure a uniform format for presentation of course-related information on Moodle: - course descriptions, including the evaluation methods, present the same content in Latvian and English when courses are taught in two languages; - students of the joint program (between LiepU and VeA) can access all study-related information, including that about study content, schedules, and evaluations from VeA, in LiepU Moodle system.

8.Ensure the students and the teaching staff have knowledge and skills to use the capabilities and informational resources of the library: - enforce the format of course descriptions in the Moodle which explicitly references books and other teaching resources available in/through the library; - educate students on the use of informational resources (including textbooks, published research papers) available in/through the library.

9.The University should develop a clear implementation plan to achieve the status of a research-oriented institution.

10.The University should develop mechanisms for the involvement of teaching staff in scientific research.

11.The University should develop a motivation system to involve academic staff in the research activities.

12.The University should develop an action plan related to their internationalization strategy.

13.The ratio of academic and research workload of academic staff should be reassessed.

14.Some of the recommendations made in the previous accreditation are still relevant and have not been fully implemented: - It is still necessary to improve the involvement of students in making decisions related to the development of the study program, or more precisely in the analysis of student feedback. - Strengthening the mechatronics part of the study program remains an essential necessity.

15. The information published in LiepU website mostly provides applicants and students with important information that is published in both languages of implementation of the study programme, but some important documents still need to be translated into english. In addition, It would be desirable to introduce uniform categorization of documents in both versions of LiepU website.

Long-term recommendations

1.Develop a more effective mechanism for informing students in cases when lectures are canceled

2.Develop a mechanism to provide feedback to students on the results of the analysis of student questionnaires

3.Ensure continuous revision and approval of regulatory documents and procedure descriptions.

4.Develop and introduce a system for academic staff motivation.

5.Develop the plan for professional development and qualification of academic staff for the time period 2023 - 2029 and fulfill it.

6.Develop a career path planning system, which can at the same time help the academic staff better understand the requirements for career development and incentivize for activities and results contributing to the professional improvement: - explicate the possibilities, expectations, and rewards of improving teaching skills, including that of didactic innovation; - explicate the possibilities, expectations, and rewards of improving research skills, especially those of high quality publications and applications for funded research; - explicate all other possible factors affecting career growth in the context of specific requirements and regulations of the University and the state; - explicate the opportunities and possibilities for the academic staff to obtain work support equipment and funding: e.g., laptops and software; conference budget; support for funding applications development; support for networking; etc.

7.Establish a formal plan for how the improvements are considered and implemented by Study Field Council. Specifically, for balancing the requests/demands of the industry partners on curricula development against the academic goals and demands of the LiepU.

8.The University should develop a long-term strategy for international cooperation in the field of scientific research.

9.The University should develop a long-term strategy for integrating pedagogical and technological innovation in the teaching and learning process.

10. LiepU receives feedback from graduates through their survey. But the feedback to the graduates is not provided directly. They are able to familiarize themselves with the annual SA report. Perhaps, the meeting of graduates with the representatives of the faculty once in a period could prevent the lack of feedback.

11. All study programs should be continued.

12. Make a better use of applied research results produced during the study process in preparation and publication of (preferably higher quality) scientific works.

13. Pay bigger attention to quality of self-assessment reports; several important sections (e.g., students enrollments statistics) are missing in SAR.

14. Develop a program/system to regularly review and apply new knowledge generated in the doctoral study program "e-technologies" to implement didactical innovation in other study programs and technological innovations in social partners' firms; use the results of the implementations for scientific publishing.

II - "Information Technology" ASSESSMENT

II - "Information Technology" ASSESSMENT

2.1. Indicators Describing the Study Programme

Analysis

2.1.1., 2.1.2. The study programme "Information Technology '' is a professional bachelor study programme with the goal to prepare competitive specialists with qualification "Software Engineer". The qualification corresponds to level 6 of the Latvian qualifications framework (LKI) and level 5 in professional qualification framework (PKL). Degree to be obtained is a Professional Bachelor degree in Information Technology with qualification Software Engineer. Classification code (IKK) is 42484. Following this code 484 corresponds to the "Programming" subsection under the thematic field of "Computing" and 42 corresponds to professional bachelor higher education. The length and study mode is full time 4 years and the structure of studies is in accordance with relevant standards of education - Cabinet Regulation No. 512 'Regulations on the second level of professional higher education state standards'. Study language is in Latvian and English: studies are organized in two language groups with identical main curriculum. Admission requirements for English language programme is IELTS 6+, TOEFL IBT 78+ or TOEFL paper based test 547. Also English and Mathematics grades (at least 60%) is considered from high school graduation certificate. For Latvian language programme admission requirements are CE in mathematics, latvian and foreign language. High school grade in informatics or programming, algebra or mathematics, physics or nature sciences.

The goal of the bachelor study program is "Preparation of highly qualified specialists in the information technology and telecommunications sector, providing opportunities to obtain appropriate second-level professional higher education and profession and developing competences that contribute to the development of a creative personality and a professional career on a regional and international scale." (SAR, p.161) It corresponds with the overall aim of study field: "to provide students with the opportunity to acquire quality academic and vocational education in information technology, computer engineering, electronics, telecommunications, computer management, and computer science programmes, including interdisciplinary study programmes, making it possible for them to prepare for independent, creative, interdisciplinary research and professional

activities."(SAR, p.16).

According to SAR (p.161) the tasks of the bachelor study program are:
1. Ensure the acquisition of knowledge that meets the requirements of the second-level higher professional education standard.
2. Develop research competences and a creative approach necessary for solving various social, economic and technical problems using information technology.
3. Promote the self-education needs satisfaction and involvement in further education.
4. Ensure the acquisition and development of skills and abilities necessary for performing professional duties in software engineering in accordance with the requirements of the professional standard.
5. Develop the social and communicative competences necessary for teamwork, both on-site and off-site, in domestic and international software development projects.

However it must be noted that the defined study results are identical with the professional master study programme "Information Technology" (masters programme has one extra study goal related to the profession of information technology project manager).

The study program both by its title, degree, qualification and curriculum is consistent with the study field "Information technologies, computer engineering, electronics, telecommunications, computer management and computer science". The title, code, degree and obtainable qualification are interrelated and coherent and fall within the scope of the general aims of the study programme.

2.1.3.
As indicated by University there have been no changes to the study programme aims and objectives during the previous reporting period. Content of certain courses has been updated or replaced with more relevant topics in regards to technology trends. In total 7 courses have been changed or replaced. Major change as noted by University in SER 3.1. made in preparation of evaluation is introduction of study modules (sets of courses) – each module is in 10 CP (or 15 ECTS) amount. Changes made to the study process and curriculum are justified.

2.1.4.
At this moment there are a total of 75 students studying in Latvian language programme. Out of which 72 are studying by state funding. During this year 34 students enrolled, while 11 students graduated. In general, each year 19-34 students enroll in Latvian language study programme. In the English language programme there are a total of 23 students. All of them study with private funding. This year 23 students enrolled while only 2 graduated. Enrollment numbers vary greatly from year to year with a record 52 new students in 2017, and only 8 in 2019. (SAR 3.1.4, annex A However it must be noted that drop-out rate is high across both language modes, therefore it is an issue that must be addressed by the University in a structured and consistent way. There seems to be a lack of comprehensive graduate data collection by the University, therefore there is no reliable statistical data available for student employment after graduation. However in SAR 3.1.3 University notes that graduates have wide opportunities to find a job in IT companies. There are 84 Information Technology companies working in Liepāja. After their studies, most international students return to their home country, where they start working in local IT companies or in a well-paid position in government institutions as an IT specialist. Some international graduates go to other countries of the European AN Union to start either their Master's studies or their professional careers in IT companies. However, given the specifics of industry, it is common knowledge that specialists within this field are in high-demand even without comprehensive graduate data to support this statement. In general, the study programme is economically justified. Student dynamics are reasonably well.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The title, code, degree and obtainable qualification are interrelated and coherent and fall within the scope of the general aims of the study programme and study field. However, it must be noted that drop-out rate is high across both language modes, therefore it is an issue that must be addressed by the University in a structured and consistent way.

Strengths:
1. Study programme fulfills a valuable economic role in providing industry with software development specialists.

Weaknesses:
1. Number of enrolled students in the English language study programme varies greatly from year to year, potentially indicating successes or failures of marketing activities.
2. High drop-out rate across both language programmes.

2.2. The Content of Studies and Implementation Thereof

Analysis

2.2.1.The study program is well-balanced between the necessary basic knowledge, skills and competencies required to perform the duties of a programming engineer and the latest scientific trends in the field. However it must be noted that the defined study results are identical with the professional master study programme "Information Technology". The study program and its content correspond to the latest scientific trends in this field. The elective modules of the study program provide a versatile insight into the latest scientific trends. For example, such courses as "Introduction to Artificial Intelligence", "Computer Vision", " Robot control", and "Internet of thing II" are offered.

The content of the program is relevant to the field of the relevant industry and labor market. The study program teaches (According to course descriptions) the 5 most used programming languages (According to Stack Overflow's 2020 Developer Survey) such as JavaScript, HTML/CSS, SQL, Python, and Java.

The study plan is based on the module principle. Most of the study courses are included in 10 credit points (or 15 ECTS) modules, where each of them ends with a module project. The content of study courses is interconnected and complementary. For example, the second-year course "Programming Languages" takes into account and accordingly requires the necessary prior knowledge from the courses of the "Software Engineering I" module. (According to course descriptions and study plan)

As mentioned in SAR (p.173), the content of the study program corresponds to the purpose and tasks of the study program aimed at preparing highly qualified information technology specialists. The provided table in Appendix 6 indicates the compliance of the study program with the requirements of Cabinet Regulations No. 512 "Regulations on the National Standard for the Second Level Professional Higher Education". Appendix 7 shows the compliance of the study program with the programming engineer profession standard approved at the meeting of the sub-council for tripartite cooperation of professional education and employment on June 17, 2009. An appendix is also provided, which shows the compliance of the study program with the new standard of the programming engineer profession, which was prepared by the Latvian Information and Communication Technology Association (LIKTA) and handed over to the working group of the Ministry of Education and Science and at the time of the submission of the HEI report, as well as the

preparation of the expert opinion is under its evaluation.

2.2.2. N/A

2.2.3 SAR (p.174) mentions what generally accepted basic principles are followed when evaluating the learning of the program. In the report and the descriptions of the study courses, the standard teaching style is mostly observed - lecture and practical work or seminars. The main forms of testing students' knowledge are tests, quizzes, seminars, discussions, study papers, etc.

The report states that to ensure a student-centred approach, the final assessment in the study program is mostly made up of a cumulative assessment, including the student's work throughout the study. The use of a project-based learning approach during studies is commendable. First and second year study projects are developed by students in teams, usually 3-4 members each. On the other hand, in the third year, study projects are individually developed.

But despite this, during the visit, the lack of innovative teaching methods is observed in conversations with students, management and academic staff. In some cases, even students mention the need to renew outdated course content (for example, machine learning, and programming). In this case, it could also indicate the need for more innovative teaching methods. The English language student flow is mainly provided with the same teaching methods as the Latvian flow, but in some cases, graduates of the study program indicate in the interview the deficiencies in the English language teaching materials.

Overall the implementation methods mostly ensure the achievement of defined learning outcomes, although learning outcomes could be improved since they are identical to the professional master study programme "Information Technology".

2.2.4.During the previous accreditation period, the faculty concluded cooperation agreements with the following IT industry companies: Emergn Latvia (Exigen Services Latvia), Accenture Latvian branch, TestDevLab, Microsoft Latvia, MikroTīkls, Tilde, Lursoft IT, Tieto Latvia, "Like A Coffe", ProgoTEAM, S- Tec Latvia, IT Līderis, Enters, "Fantasyposh Latvia", "Highfive", "Passive Management", "Giraffe360", DEVS.LV, Tet, "UPB", "AE Partner", "InPass", as well as with Kurzeme Business Incubator, Latvian Chamber of Commerce and Industry, Latvian Information and Communication Technology Association (LIKTA), Microsoft IT Academy Program, Liepaja City Council, etc.

SAR (p.175) states that foreign students have fewer options for internships, although it is not specifically stated which of the mentioned companies also offer internship opportunities to foreign students. But examples are provided where some international students have chosen internship in IT companies in Latvia, for example, Accenture, Passive Management, Liepājas Digital Innovation Park, TestDevLab, etc. And since many companies in the IT sector operate in international software projects in which the working language is English, they are also ready to accept foreign students in practice. Students of both streams are also offered Erasmus+ opportunities and internships in a foreign company, which some of the students have also used during the reporting period.

In general, it can be concluded that the internship opportunities and provisions offered to students are at a sufficient level to ensure internship opportunities for students of both flows. Also, during the visit, a large group of employers' representatives arrived, and they mentioned that they are happy to take students of the study program for internships. No significant deficiencies in the internship's work organization are observed or indicated. As well as internship tasks (which were found in the

course description section) are following the achievable study results and the professional standard, as well as meet the requirements of regulatory acts.

2.2.5. N/A

2.2.6.According to the SAR (p.162) the results of study programme Information technologies are defined:
- The general skills have been acquired which are necessary to be able manage teamwork, plan the work, present the IT solutions and the results of the work done in Latvian and English.
- The common knowledge of the information technology industry on the design of computer systems and the basic principles for building them, IT applications for natural, technical, and social process solutions, national and international standards of the IT industry and IT industry terms in Latvian and English, as well as advanced skills for the use of acquired knowledge in practice, has been acquired.
- Methods and technologies for programming, development and maintenance of computer systems have been learned.
- The skills needed to carry out independent research in the information technology sector have been acquired and developed.
- Special skills have been acquired and developed in the profession of programming engineer required to perform professional duties – coding, design, software maintenance, software deployment, software testing, specification of requirements, preparation of user documentation and software project planning.

The content of the study programme includes Software Development, Software engineering, Computer systems and networks, Applications of artificial intelligence, Smart technologies etc. (SAR, p.173).

The bachelor students have chosen topics relevant to the study field that correspond to the study programme (it's results and content), for example:
- Chatbot development for website of Liepaja University Faculty of Science and Engineering (areas Artificial intelligence, websites);
- Microcomputer-based system for large scale structured data acquisition, quality analysis and visualization (areas Websites - Directories, Automation, Work productivity, Information technology);
- Development of accessibility requirements analysis web (areas Web servers, Information technology);
- Release engineering automation and customization (areas Software, Computer programs - Testing, Information technology);
- Communication flow system between employee, Management, and client (Areas Computer networks, Information technology);
- Lidar-equipped, hand-held aid for the visually impaired (areas Visual impairment, Electronic apparatus and devices, Information technology);
- Developing a Moodle system module for changing downloaded Word documents depending on the user's configuration with an XML approach (areas Internet in education, Computer science, Computer programs);
- Guidelines for implementing content recommender systems: planning phase and development technique selection (areas Algorithms, Machine learning);
- Utilize Quick Response code technology as a secure and productive payment method (areas Banks and banking, Software applications).

Conclusions on this set of criteria, by specifying strengths and weaknesses

The study program is well-balanced between the necessary basic knowledge, skills and competencies required to perform the duties of a programming engineer and the latest scientific trends in the field. However it must be noted that the defined study results are almost identical with the professional master study programme "Information Technology". Professional master study programme "Information Technology" study results should be processed in accordance with the Regulation of Ministers Cabinet No. 322 "Regulations on Latvian education classification" requirements.

The study implementation methods contribute to the achievement of the aims and learning outcomes of the study courses and the study programme. Student-centred learning and teaching principles are considered. The use of a project-based learning approach during studies is commendable.

The English language student flow is mainly provided with the same teaching methods as the Latvian flow, but in some cases, deficiencies in English language teaching materials are observed.

Some courses content is outdated and need to be reviewed (for example, machine learning, and programming). In this case, it could also indicate the need for more innovative teaching methods.

The internship opportunities and provisions offered to students are at a sufficient level to ensure internship opportunities for students of both flows

The bachelor students have chosen topics relevant to the study field that correspond to the study programme.

Strengths:

1. The study program is well-balanced between the necessary basic knowledge, skills and competencies required to perform the duties of a programming engineer and the latest scientific trends in the field.

2. The content of the program is relevant to the field of the relevant industry.

3. Employers' representatives highly value the program and willingly accept students of the program for internships and jobs.

Weaknesses:

1. Apart from project-based learning approach, innovative methodological and technical teaching solutions are rarely used in the study process. The standard teaching style is mostly observed - lecture and practical work or seminars.

Assessment of the requirement [5] (applicable only to master's or doctoral study programmes)

1 R5 - The study programme for obtaining a master's or doctoral degree is based on the achievements and findings of the respective field of science or field of artistic creation.

   Assessment of compliance: Not relevant

   N/A

2.3. Resources and Provision of the Study Programme

Analysis

2.3.1. According to SAR (p.37), the study program is financed in accordance with the cost of the study programme set by the Cabinet of Minister. (Cabinet of Ministers' Regulation No 994 of 12.12.2006. "Procedures for financing higher education institutions and colleges from state budget funds").

According to SAR (p.40), funding for scientific research comes from several sources: Basic funding for scientific activities granted by the Ministry of Education of the Republic of Latvia (according to the Cabinet of Ministers Regulation No 1316 "Procedure for calculating and granting basic funding to scientific institutions".

According to SAR (p.40), for maintenance of elected scientific staff, scientific infrastructure, as well as partial provision of research work for academic staff, different funding sources are available: Performance funding, funds raised in a competitive procedure (internal grants, project co-financing, projects), as well as the Scientific Activity Development Fund of the Liepaja University.

According to SAR (p.40), there are funds available to support scientific activities of the academic staff: the funding is allocated from the development budget of the LiepU Faculty of Natural Sciences and Engineering and the LiepU Scientific Activities Development Fund.

During the meeting with the academic personnel, the Experts Committee (EC) received indications that not 100% of applications for funding research activities is approved. Approval of applications is a competitive process, the outcomes of which determine such factors as availability of funds and qualitative evaluation of the goals and outcomes of the application against the goals of the academic unit (faculty/institute).

During the meeting with the academic personnel, the Experts received indications that the academic staff may lack information on availability of budget for the provision of work support equipment (laptops).

2.3.2. N/A

2.3.3. According to SAR (p.37), the study program is financed in accordance with the cost of the study programme set by the Cabinet of Minister. (Cabinet of Ministers' Regulation No 994 of 12.12.2006. "Procedures for financing higher education institutions and colleges from state budget funds").

According to SAR (p.41), the Director of Finance and Personnel ensures that the persons preparing the budget shall act in accordance with the instruction "Planning, Execution and Control of the Liepaja University Core Budget" during the budget planning and execution process. Budget planning is carried out in accordance with the QMS procedure A-2-1 "Core Budget Planning", and execution and control in accordance with procedure A-2-2 "Execution and Control of the Core Budget."

According to SAR (p.40), allocation of cost within the program is done according to the actual needs of the program and in consideration of the development strategy of LiepU.

According to SAR (p.37), the financial resources available to the study program consist of the state budget subsidy (the majority of the budget income) and own income (tuition fees).

According to SAR (p.37), the amount of tuition fee and the payment procedure for each academic year shall be determined and approved by the LiepU Council.

According to SAR (p.37), the provision of financial resources is stable. The base cost per state-funded study place is set at EUR 1,630.11 in 2022. The tuition fee for the full-time professional bachelor's degree programme "Information Technology" was increased from EUR 1,410 (in English - EUR 2,200) to EUR 2,100 (in English - EUR 2,500).

The calculation of the projected costs of the professional bachelor study programme "Information technology" for full-time study for the period 2021-2022 is based on the base costs for 2021 (EUR 1,630.11 per one study place) and the coefficient of the thematic area of education "Computer science" established by the Ministry of Education and Science: 1.5, as well as the cost coefficient for professional bachelor-level study programmes: 1.0 The cost per study place in 2022 is EUR 2 445.17.

According to SAR (p.169), in the spring of 2022, 87 students have enrolled in the professional bachelor's study programme, 63 of them studying in Latvian and 24 in English. The total number of students in 2021/22 study year is 98 (SAR, p.170). The dynamics of the number of students since 2013 is good - the lowest number of students was at the launch of the program in 2013 - 42, thereafter the number of students was growing to reach 130 in pre-COVID year of 2017 and to drop to 90 in 2019 ever since remaining stable at this level.

The actual number of enrolled students is well above the SAR-reported (p.38) minimum number of 10 students for the financially profitable implementation of the study program.

Conclusions on this set of criteria, by specifying strengths and weaknesses

Given the procedures reported in SAR, and not having identified facts proving otherwise during the Experts' visit to LiepU, it can be concluded that the study provision, scientific provision, informative provision (including library), material and technical provision and financial provision comply with specific features and the conditions for the implementation of the study programme, create prerequisites for the achievement of the learning outcomes and indicate the possibility to ensure a high-quality study process

At the same time, during the meeting with academic staff it was brought to the Experts's knowledge, that not 100% of applications for funding research activities are approved, and that the teaching staff is not aware of the possibility to obtain a personal laptop for the delivery of work-related tasks.

Given the procedures reported in SAR, and not having identified facts proving otherwise during the Experts' visit to HEI, it can be concluded that the funding available to the study programme, funding sources and the use of funding ensures full implementation of the study process, the study programme has the minimum number of students to ensure the profitability of the study programme and facilitates the development of the study program.

Strengths:
1. good material and technical base;
2. great opportunities to use Internet, library electronic data bases
sufficient financial provision;
3. sufficient number of students to guarantee profitable implementation of the study program

Weaknesses:
1. Low number of graduates: during the last 5 years (2017-2022), 218 students were enrolled, only 61 graduated. Each year graduates less than half of the number of enrolled 4 years ago (the duration of the program): 7/27; 12/20; 10/35; 6/45; 14/20; 13/52. (SAR, p.170).
2. High drop-out rate: in 2017 and 2018 the number of drop-outs exceeded the number of enrolled students. During the other years, the number of drop-outs is higher than half of the enrolled in the same year (SAR, p.170).

Assessment of the requirement [6]

1 R6 - Compliance of the study provision, science provision (if applicable), informative provision (including library), material and technical provision and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of learning outcomes

Assessment of compliance: Fully compliant

The study provision, scientific provision, informative provision (including library), material and technical provision and financial provision comply with specific features and the conditions for the implementation of the study programme, create prerequisites for the achievement of the learning outcomes and indicate the possibility to ensure a high-quality study process

2.4. Teaching Staff

Analysis

2.4.1. SAR (p. 181) indicates that all academic staff including visiting teaching staff involved in the study programme comply with the conditions for the implementation of the study programme and the requirements of the regulatory enactments (e.g. the Law on Higher Education Institutions, "Regulations on elections to academic positions", "Criteria for the evaluation of professional qualifications of academic staff for courses" (available at kvs.liepu.lv). The qualification level of the academic staff involved in the implementation of the study programme by study year is presented in Table 3.4.1.1 (SAR, p. 181). All lecturers have a Master's or a Doctoral degree. According to Table 3.4.1.1., the number of teaching staff with a doctorate degree has increased slightly in the last four years, while the number of teaching staff with a master's degree has decreased. In the last three years, the proportion of teaching staff with a master's degree has been stable at 68%, and the proportion of teaching staff with a doctorate degree at 32%. Most of the teaching staff have a Master's or Doctoral degree in computer science or information technology. Some associate professors have degrees in pedagogy or educational sciences, specializing in teaching methods in informatics, mathematics or physics. Associate professors of general education courses have a master's or doctoral degree in social sciences. The qualifications of the teaching staff ensure the competence necessary to prepare and conduct classes and to organize independent study work to support students' professional development. Visiting lecturers from abroad add an international dimension to the study programme. IT professionals invited from companies supplement the study programme with their practical work experience (SAR, pp. 181-182).

The number of elected academic staff members in the study program varies slightly from year to year, but it is around 25%. In the 2021/22 academic year, nine elected academic staff members worked in the study program, including one professor, one leading researcher, three assistant professors, four lecturers, and one visiting professor from Bulgaria. Other involved academic staff are specialists from IT companies or trainers from other educational institutions (SAR, p. 182). At the time of submission of the self-assessment report, the study programme "Information Technology" involved 31 members of academic staff for 87 students (SAR, p. 183).

Both the SAR and the interviews with students, graduates, employers and lecturers make it possible to state that the study programme involves competent lecturers who are interested in promoting the acquisition of students' knowledge, skills and professional competence.

2.4.2. It is noted in SAR that in order to ensure high-quality and innovative implementation of the study programme, several criteria are used for the selection of the academic staff to be involved in the study programme, making sure that the courses are taught by qualified, scientifically, and

methodologically prepared instructors, specialists in the field of study, who use modern approaches in their work (p. 48).

According to the Law on Higher Education Institutions, and the Liepaja University "Regulations on elections to academic positions", residents of the Republic of Latvia and foreign citizens can be elected to academic positions, and their election to academic positions is governed by these regulatory documents (SAR, p. 48). The requirements for the selection and participation of foreign teaching staff in the teaching of study programmes are specified in the Liepaja University Academic Staff Development Plan for 2018–2022 (SAR, p. 48).

The selection of teaching staff for the implementation of study programmes is based on the "Criteria for the evaluation of professional qualifications of academic staff for courses". The mandatory criteria for selecting the teaching staff are: 1) the qualifications of the teaching staff meet the requirements set by applicable laws and regulations; 2) research area/interest is relevant to the study programme/course; 3) appropriate knowledge of the official language and of foreign languages (SAR, p. 48).

The assessment criteria of teaching staff are described in detail in SAR (p. 48) and include doctoral or master degree appropriate to the course taught or one in a related field, and publications in a sub-discipline or field of artistic creativity. The requirements set for the candidates for a teaching position are set in accordance with the Liepaja University "Regulations on elections to academic positions".

Changes in the composition of the teaching staff are mainly due to generational changes. In most cases, the changes have taken place gradually, the successors of the courses have been provided with consultations by experienced colleagues. Thus, the quality of studies has not been significantly affected (SAR, p. 182). The study programme involves several LiepU IT Master's graduates and doctoral students.

Based on analyzed documentation and interviews with both students and lecturers, it was evident that the necessary procedures for recruitment and evaluation of staff have been established, the dialogue on the expected learning outcomes in study courses has been maintained. Based on documentation and interviews with management and faculty, it can be argued that the University has developed procedures for staff engagement and/or employment processes.

2.4.3. N/A

2.4.4. Each member of the academic staff in the last six years has published in peer-reviewed editions, including international editions.

2.4.5. The teaching staff employed in the Professional bachelor study programme "Information Technology" cooperate in the development and implementation of joint research and projects, as well as in the development of the content of joint professional specialization and theoretical courses in the field of study. It is mentioned in SAR (p. 183), but unfortunately, the names of specific projects are not mentioned in the report. The academic staff of the Professional Bachelor degree in Information Technology share information on current developments in the field, teaching, learning and assessment methods and student progress in the study process. They exchange information on current developments in the field through meetings at various industry exhibitions, international conferences, seminars and other networking events (SAR, p. 183). Information exchange is ensured by regular meetings of the teaching staff organized by the Faculty and at meetings within the

framework of research activities at scientific institutes. The Faculty has historically developed a good culture of internal collaboration. However, no formal mechanism has been developed for the promotion of mutual cooperation between academic staff (SAR, p. 183). Interviews with academic staff confirmed that there are regular meetings to exchange information and that academic staff share information about the content of their courses and the teaching, learning and assessment methods they use. However, sharing experiences from innovative solutions/practices (methodological and technological innovation) was not observed. No innovation in the use of learning methods or technology stood out (innovative learning design models, learning analytics, open digital badges, online whiteboards), despite the fact that e-learning is a field of study in the study area. Conclusions

The qualification of the teaching staff members involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments. The study programme employs enthusiastic and competent academic staff for the implementation of the study field. There is a conviction that the study process is successfully implemented in the institution. The views expressed at the meeting with students and graduates, in turn, show that not all courses are taught at a high level and need to be modernized to include the latest scientific results and trends. In addition, it stood out that the academic staff do not use all the possibilities of the learning management system Moodle and the possibilities of modern technology (e.g. learning analytics, badges, online whiteboards, etc.). The courses in the Moodle need better structuring and elimination of outdated information. The teaching workload of academic staff is an obstacle for methodological and technological innovation.

Conclusions on this set of criteria, by indicating strengths and weaknesses

Conclusions:

The qualification of the teaching staff members involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments. The study programme employs enthusiastic and competent academic staff for the implementation of the study field. There is a conviction that the study process is successfully implemented in the institution. The views expressed at the meeting with students and graduates, in turn, show that not all courses are taught at a high level and need to be modernized to include the latest scientific results and trends. In addition, it stood out that the academic staff do not use all the possibilities of the learning management system Moodle and the possibilities of modern technology (e.g. learning analytics, badges, online whiteboards, etc.). The courses in the Moodle need better structuring and elimination of outdated information. The teaching workload of academic staff is an obstacle for methodological and technological innovation.

Strengths:
1. The qualification of the teaching staff members involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments.
2. There is a conviction that the study process is successfully implemented in the institution.
3. Competencies of the academic staff of the study programme are generally high and enable the achievement of the aims and learning outcomes of the study programme and the relevant study courses.
4. The study programme management, lecturers, and support staff work as a team.
5. In the pandemic situation, the University and academic staff quickly reorganized their work into a distance learning mode.

Weaknesses:

1. Innovative solutions (methodological and technological innovation) are not implemented in the study process despite the fact that e-learning is a field of study in the study field, no innovation in the use of learning methods or technology stood out (e.g. innovative learning design models, learning analytics, open digital badges, online whiteboards).

2. The courses in the Moodle are not well structured and contain outdated information.

3. The available possibilities of the Moodle are not fully used.

4. The teaching workload of academic staff is an obstacle for methodological and technological innovation.

5. The course level is uneven in the study programme and several courses need to be modernized.

Assessment of the requirement [7]

1 R7 - Compliance of the qualification of the academic staff and visiting professors, visiting associate professors, visiting docents, visiting lecturers and visiting assistants with the conditions for the implementation of the study programme and the requirements set out in the respective regulatory enactments.

Assessment of compliance: Fully compliant

The qualification of the academic staff complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments.

2.5. Assessment of the Compliance

Requirements

1 1 - The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard

Assessment of compliance: Fully compliant

Annex P6 ("P6_AtbilstibaValstsAIstandartam_Bit_ENG.pdf") confirms that the study program complies with Cabinet Regulation No. 512 "Noteikumi par otrā līmeņa profesionālās augstākās izglītības valsts standartu"

2 2 - The study programme complies with a valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided if the completion of the study programme leads to a professional qualification (if applicable)

Assessment of compliance: Fully compliant

Annex P7 ("P7_AtbilstibaProfesijasStandartam_EN.pdf") confirms that the programme is compliant with Software Engineer professional standard.

3 3 - The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 561 , Paragraph two and Section 562 , Paragraph two of the Law on Higher Education Institutions.

Assessment of compliance: Partially compliant

Attached study course descriptions (Annex P10) are prepared in latvian and english. There have been cases when study materials for international students are only partially available in english. Descriptions complies with regulations set forth in Law on Higher Education Institutions

4   4 - The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure according to which state recognised documents of higher education are issued.

   Assessment of compliance: Fully compliant

   The provided Diploma sample complies with the procedure by which state-recognised documents of higher education are issued according to MK No. 202 "Kārtība, kādā izsniedz valsts atzītus augstāko izglītību apliecinošus dokumentus".

5   5 - The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions.

   Assessment of compliance: Not relevant

6   6 - Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Higher Education Institutions.

   Assessment of compliance: Not relevant

7   7 - At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts (if applicable).

   Assessment of compliance: Not relevant

8   8 - The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

   Assessment of compliance: Fully compliant

   Attached resumes of staff and LiepU confirmation letter Nr. 7.D7.10./57 verifies that state language proficiency is compliant with MK. Nr. 733 "Noteikumi par valsts valodas zināšanu apjomu, valsts valodas prasmes pārbaudes kārtību un valsts nodevu par valsts valodas prasmes pārbaudi".

9   9 - The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language (if applicable).

   Assessment of compliance: Fully compliant

   Attached resumes of staff and LiepU confirmation letter Nr. 7.D7.10./55 verifies that language proficiency in English is at least B2.

10 10 - The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

   Assessment of compliance: Fully compliant

   Sample of attached study agreement complies with MK. Nr. 70 "Studiju līgumā obligāti ietveramie noteikumi".

11 11 - The higher education institution / college has provided confirmation that students will be provided with opportunities to continue their education in another study programme or another higher education institution or college (agreement with another accredited higher education institution or college) if the implementation of the study programme is terminated.

Assessment of compliance: Fully compliant

Attached contract Nr. 1.-2022/207 with Latvia University of Life Sciences and Technologies confirms that institution provides possibility to continue studies within professional bachelor programme "Information Technologies for Sustainable Development". Including students of English language programme.

12 12 - The higher education institution / college has provided confirmation that students are guaranteed compensation for losses if the study programme is not accredited or the study programme's license is revoked due to the actions (actions or omissions) of the higher education institution or college and the student does not wish to continue studies in another study programme.

Assessment of compliance: Fully compliant

LiepU confirmation letter Nr. 1.-1.6./245 states, that students are guaranteed compensation for losses if the study programme is not accredited or the licence of the study programme is revoked due to the actions of the college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

13 13 - The joint study programmes comply with the requirements prescribed in Section 55.(1), Paragraphs one, two, and seven of the Law on Higher Education Institutions (if applicable)

Assessment of compliance: Not relevant

14 14 - Compliance with the requirements specified in other regulatory enactments that apply to the study programme being assessed (if applicable)

Assessment of compliance: Not relevant

Assessment of the requirement [8]

1 R8 - Compliance of the study programme with the requirements set forth in the Law on Higher Education Institutions and other regulatory enactments.

Assessment of compliance: Fully compliant

Study program complies with Cabinet Regulation No. 512, Software Engineer professional standard and other regulatory enactments.

General conclusions about the study programme, indicating the most important strengths and weaknesses of the study programme

Study program complies with Cabinet Regulation No. 512 and Software Engineer professional standard.
The study program is well-balanced between the necessary basic knowledge, skills and competencies required to perform the duties of a programming engineer and the latest scientific trends in the field.
Study programme is delivered in two languages: latvian and english.
High drop-out rate across both language programmes is observed.
The course level is uneven in the study programme and several courses need to be modernized.
The courses in the Moodle are not well structured and contain outdated information. The available

possibilities of the Moodle are not fully used.

The teaching workload of academic staff is an obstacle for methodological and technological innovation.

The experts conclude that the requirements towards the study program are fulfilled.

No major deficiencies which could not be eliminated during the 2-year accreditation period were identified.

The study program can continue to be implemented in all declared implementation options, in all applied implementation languages and in all applied implementation places.

The experts identify the most important weaknesses and strengths identified in the study programme.

Strengths:

1. Study programme fulfills a valuable economic role in providing industry with software development specialists.

2. The study program is well-balanced between the necessary basic knowledge, skills and competencies required to perform the duties of a programming engineer and the latest scientific trends in the field.

3. The content of the program is relevant to the field of the relevant industry

4. Great support from employers' representatives

5. good material and technical base;

6. great opportunities to use Internet, library electronic data bases

7. sufficient financial provision;

8. sufficient number of students to guarantee profitable implementation of the study program

9. The qualification of the teaching staff members involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments.

10. There is a conviction that the study process is successfully implemented in the institution.

11. Competencies of the academic staff of the study programme are generally high and enable the achievement of the aims and learning outcomes of the study programme and the relevant study courses.

12. The study programme management, lecturers, and support staff work as a team.

13. In the pandemic situation, the University and academic staff quickly reorganized their work into a distance learning mode.

Weaknesses:

1. Number of enrolled students in the English language study programme varies greatly from year to year, potentially indicating successes or failures of marketing activities.

2. Low number of graduates: during the last 5 years (2017-2022), 218 students were enrolled, only 61 graduated. Each year graduates less than half of the number of enrolled 4 years ago (the duration of the program): 7/27; 12/20; 10/35; 6/45; 14/20; 13/52. (SAR, p.170).

3. High drop-out rate across both language programmes.

4. High drop-out rate: in 2017 and 2018 the number of drop-outs exceeded the number of enrolled students. During the other years, the number of drop-outs is higher than half of the enrolled in the same year. (SAR, p.170).

5. Despite the use of project-based learning approach, the lack of appropriate and innovative teaching methods in some cases is observed

6. Innovative solutions (methodological and technological innovation) are implemented in the study process to a small extent despite the fact that e-learning is a field of study in the study field, no innovation in the use of learning methods or technology stood out (e.g. innovative learning design

models, learning analytics, open digital badges, online whiteboards).

7. The courses in the Moodle are not well structured and contain outdated information.

8. The available possibilities of the Moodle are not fully used.

9. The teaching workload of academic staff is an obstacle for methodological and technological innovation.

10. The course level is uneven in the study programme and several courses need to be modernized.

Evaluation of the study programme "Information Technology"

Evaluation of the study programme:

Good

2.6. Recommendations for the Study Programme "Information Technology"

Short-term recommendations

1.The Study Programme leader must ensure that all courses are updated and contain contemporary content.

Long-term recommendations

1. The experts lack information on the problem of the high drop-out rate: is this a local phenomena of LiepU and the specific study field/ program, or is this a stable pattern across different HEIs in Latvia? If this is a nation-wide pattern, nothing can be recommended specifically for LiepU. If this is a local phenomena, LiepU should re-evaluate how to make 1) the student support program, 2) the marketing program, and 3) practice and job placement with social partners program interact to give maximum support for the enrolled students.

2. To attract new and retain enrolled students, develop and implement programs to promote and exploit the great technical and informational bases offered by LiepU: explore the novel forms of teaching using available online resources; popularize the results of the teaching and students' applied projects; promote the benefits of the program and job opportunities.

3. Promote mutual cooperation between teaching staff to exchange good practices regarding innovative methodological and technical teaching solutions 4. The University should develop a strategy and action plan to increase the use of innovative solutions (methodological and technological innovation) in the study process.

4. The University should develop a strategy and action plan to increase the use of innovative solutions (methodological and technological innovation) in the study process.

5. Academic staff must be given training on the implementation of pedagogical and technological innovation in the teaching and learning process.

6. Training on using available possibilities of Moodle and learning design must be organized for academic staff.

7. The teaching workload of academic staff should be reassessed so that it does not stand as an obstacle for methodological and technological innovation.

II - "Smart Technologies and Mechatronics" ASSESSMENT

II - "Smart Technologies and Mechatronics" ASSESSMENT

2.1. Indicators Describing the Study Programme

Analysis

2.1.1, 2.1.2
The study programme "Smart Technologies and Mechatronics'' is a joint professional bachelor study programme with the goal to prepare competitive specialists with qualification "Mechatronics Engineer". The qualification corresponds to level 5 of the Latvian qualifications framework (LKI) and level 4 in professional qualification framework (PKL). Degree to be obtained is a Professional Bachelor degree in Mechatronics with qualification Mechatronics Engineer.

Classification code (IKK) is 42523. Following this code 523 corresponds to the "Electronics and Automatics" subsection under the thematic field of "Engineering Sciences and Technologies" and 42 corresponds to professional bachelor higher education. The length and study mode is full time 4 years and the structure of studies is in accordance with relevant standards of education - Cabinet Regulation No. 512 'Regulations on the second level of professional higher education state standards'. Study programme is licenced both in Latvian and English, however University is enrolling only in Latvian programme.

Programme admission requirements are CE in mathematics, latvian and foreign language. High school grade in informatics or programming, algebra or mathematics, physics or nature sciences. Extra points are for olympiad winners and those who have finished professional vocational education with qualification – technician of mechatronical systems.
The goal of the bachelor study program as defined by the University is:
"• to promote the growth of specialists in the sectors of the national economy in which modern electromechanical equipment is managed with integrated application of electronics and computer equipment;
• to promote the development of computer control in the region and the country;
• to provide conditions for obtaining high-quality and competitive higher professional education in computer control by preparing specialists who are able to carry out academic and applied research in computer control science (branch of science - 2.2. Electrical engineering, electronics, information and communication technologies);
• to give bachelors of the study program "Smart Technologies" the opportunity to obtain a master's degree in engineering, mechatronics, adaptronics, transport, etc., continuing their education. areas, as well as the relevant professional competencies;
• to promote the development of a creative, responsible and motivated personality for lifelong learning."

The study program both by its title, degree, qualification is consistent with the study field "Information technologies, computer engineering, electronics, telecommunications, computer management and computer science". The title, code, degree and obtainable qualification are interrelated and coherent and fall within the scope of the general aims of the study programme.

2.1.3.
As indicated by University in SAR 3.1.1. "In the licensing process in 2021, the commission made a request to increase the number of credits in the study course "Manufacturing technologies" to 6 KRP - done, to introduce the study course "Hydraulics and pneumatics" in the amount of 2 KRP - done, to remove the Latvian language from the planning for the English language group - done, and to supplement material support with 2 CNC machine tools within 5 years. One will be purchased in late

2022/2023. at the beginning of the year, the second - within two years." These changes are justified in the context of licensing report recommendations.

2.1.4.

In the spring of 2022, 12 students were enrolled in Latvian language programme. 4 students enrolled as previous study programme "Mechatronics" second year students for study continuation. Economic and social justification for study programme is sound. There is no doubt that well qualified specialists in the field are in demand both nationally and regionally. As indicated in SAR 3.1.3 - almost all graduates of the last six years work in the field of mechatronics in accordance with their professional qualification obtained at LiepU.

2.1.5.

As of now the full opportunities by implementation of joint programmes has not been explored. First of all, only legal minimums are conducted at partner university to maintain compliance with requirements for joint programme. Lack of true cooperation is signified by the fact, that Ventspils University of Applied Sciences is not taking in students in this study programme - only through Liepaja University students are being matriculated. Studies are organised in the form of dual studies, meaning that diploma is issued independently by LiepU. There is no staff mobility conducted between partner institutions in the framework of joint programme cooperation. During the visit, students indicated that they are having trouble reaching out to VeA staff regarding the study process. Study programme communication channels and other important processes are not well integrated between institutions. As indicated by programme management, main reason for development of joint programme is fact, that VeA has access to better study infrastructure and equipment.

Conclusions on this set of criteria, by specifying strengths and weaknesses

Study programme corresponds to the study field. Study programme is new and this is the first year, when students are being matriculated, therefore the study programme is still in the approbation phase. The title, code, degree and obtainable qualification are interrelated and coherent and fall within the scope of the general aims of the study programme. As of now it seems that the fact of the study programme being joint is providing more challenges than opportunities.

Strengths:
1. New study programme provides an opportunity to approbate and develop study programme further.

Weaknesses:
1. Full opportunities of having a joint study programme has not been explored.

2.2. The Content of Studies and Implementation Thereof

Analysis

2.2.1. The content of the study program is generally relevant to modern trends in smart technologies and meets the needs of scientific trends in the field. The program has well-covered content with robot control and the Internet of Things in the Information Technology module, which could be considered the strength of the study program. However, the study programme and the content of the study courses only partly meet the needs of the industry, labour market and professional standard (MEHATRONIKAS INŽENIERA profesiju standarts, apstiprināts PINTSA sēdē 2022. gada 9. februārī) in the field. There is an insufficient amount of courses in the field of

Mechatronics, especially regarding industrial mechatronic systems and their control (PLC), which is an essential competence of a Mechatronics engineer.

The compliance with the standard of the Mechatronics Engineer profession specified in Appendix 4 has not been carried out sufficiently by the content of the study program and inconsistencies with the contents of the course can be observed. Appendix 4 states that the learning of programmable logic controllers takes place in the "Programming I, II, III" and "Internet of Things I, II" courses. However, when studying the course descriptions, it can be found that in the course "Internet of Things I, II" some classes are dedicated to the applications of industrial PLC controllers ("WAGO") (Appendix 10 p.133 Latvian version and p.130 English version). On the other hand, studying the description of the "Programming I, II, III" course (Appendix 10, p. 46), it can be concluded that the course is devoted more to learning the basics of programming, not industrial robots. Learning technological processes and industrial production automation elements can be observed to a small extent and from a more theoretical point of view in the course "Production Engineering I, II, III" (Appendix 10, p. 116 Latvian version and p.112 English version). It should also be noted that the course descriptions differ in English and Latvian. But despite that, it is not a sufficient volume to ensure the necessary competencies in industrial robotics and their management.

Annex 9 provides a mapping of study courses for achieving the study results of the study program. However, the mapping compares to other study program results than those indicated in the report itself. The provided table in Appendix 6 indicates the compliance of the study program with the requirements of Cabinet Regulations No. 512 "Regulations on the National Standard for the Second Level Professional Higher Education". It could be said that the content of the study program partially meets the purpose and tasks of the study program, taking into account the above-mentioned shortcomings in the content of the study program.

2.2.2. N/A

2.2.3. The report mentions that the study program uses the following teaching methods: lectures, seminars, discussion, individual, pair and group work, practical work, laboratory work, projects, and independent work. In the report and the descriptions of the study courses, the standard teaching style is mostly observed - lecture and practical work or laboratory work. The proportional distribution of lectures and practical work (or laboratory work) is mostly fifty-fifty. As well as in some of the courses with more emphasis on the practical part and some on the lecture form.

According to the report, the study process uses multimedia technologies, study materials for successful learning of study course content, as well as tests and other types of examinations available in the e-study environment. This is also confirmed by the teaching staff of the program during the visit. But despite that, a lack of innovative training methods is observed. In some cases, even students mention the need to renew outdated course content (for example, artificial intelligence, and programming). It is also possible that in this case, it could rather indicate the need for more innovative teaching methods.

The report mentions what generally accepted basic principles are followed when evaluating the learning of the program. In the study program, assessment is mostly implemented according to the cumulative principle. It is also mentioned that students' self-reflection is an important form of assessment of the competencies acquired during the study process.

According to SAR (p.203-205), the implementation of the study program is based on a student-centred approach and the creation of positive pedagogical relations, involving students in the

evaluation of the study process, providing feedback and improving the study programs while encouraging them to be independent and responsible in achieving the results of the study process. However, during the visit, in the interviews with students, it can be observed that it is necessary to improve the provision of this feedback.

Within the framework of the joint study program, courses related to electronics and electromagnetism in the amount of 16 (i.e. 10% of 160) credit points are implemented at Ventspils University of Applied Sciences. Studies are organized in the form of dual studies. Apart from the fact that in some cases there have been problems with the logistics of the organization of study lectures (according to student interviews), in the case of joint courses, cooperation positively contributes to the achievement of the goals and results of the study courses and the program.

Overall the study implementation methods contribute to the achievement of the aims and learning outcomes of the study courses and the study programme.

2.2.4. According to the report, students are provided with information about the purpose of the practice, the tasks, and the results to be achieved in the internship (in meetings which take place a month before the start of the internship). If necessary, students are provided with support in finding an internship by implementing contracts with cooperation partners: SIA "Silkeborg Spaantagning Baltic", SIA "Trelleborg Wheel Systems Liepaja SIA", SIA "Jensen Metal", SIA "InPass", etc.

It is also mentioned that internship places must be chosen according to the knowledge acquired during the study semester and this is indicated in the internship introductory materials. Thus, all areas in which the young specialist could work after graduating from the study program are covered. The report also states that student surveys and discussions during practice conferences confirm that the majority of students have already made the choice of their professional field during their studies, and the choice has been largely influenced by the experience gained in the internship.

In general, it can be concluded that the internship opportunities and provisions offered to students are at a sufficient level to ensure internship opportunities for students. Also, during the visit, employers' representatives mentioned that they are happy to take the study programs' students for internships. No significant deficiencies in the internship's work organization are observed or indicated. As well as internship tasks following the achievable study results and the professional standard, as well as meeting the requirements of regulatory acts.

2.2.5. N/A

2.2.6. According to the SAR (p.32) the study programme Smart Technologies and Mechatronics is a new vocational study programme that was developed in the field of study during the reporting period. It was approved by the Liepaja University Faculty of Science and Engineering Council, Liepaja University Senate and Ventspils University of Applied Sciences Senate, and licensed in 2021 (No 2021/02K, of 14 July 2021) issued for its implementation. Accreditation of this study programme is carried out for the first time (SAR, p.188). So, no bachelor thesis was defended in this programme yet.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The content of the study program is generally relevant to modern trends in smart technologies, the program has well-covered content with robot control and the Internet of Things in the Information Technology module, which could be considered the strength of the study program. However, there is

an insufficient amount of courses in the field of Mechatronics, especially regarding industrial mechatronic systems and their control (PLC), which is an essential competence of a Mechatronics engineer.

The compliance with the standard of the Mechatronics Engineer profession has not been carried out sufficiently by the content of the study program and inconsistencies with the contents of the course can be observed.

The content of the study program partially meets the purpose and tasks of the study program, taking into account the above-mentioned shortcomings in the content of the study program

The study implementation methods contribute to the achievement of the aims and learning outcomes of the study courses and the study programme. According to SAR the implementation of the study program is based on a student-centred approach. However, during the visit, in the interviews with students, it can be observed that it is necessary to improve the provision of their feedback.

The internship opportunities and provisions offered to students are at a sufficient level to ensure internship opportunities for students. No significant deficiencies in the internship's work organization are observed or indicated. All areas in which the young specialist could work after graduating from the study program are covered in the selection of internship company. As well as internship tasks following the achievable study results and the professional standard, as well as meeting the requirements of regulatory acts.

Strengths:
1. the program has well-covered content with robot control and the Internet of Things in the Information Technology module
2. study module at Ventspils University of Applied Sciences

Weaknesses:
1. there is an insufficient amount of practical content in the field of industrial mechatronic systems and their control (PLC), which is an essential competence of a Mechatronics engineer. There should be a minimum of 4 credit point course with more practical content in industrial mechatronic systems.
2. The compliance with the standard of the Mechatronics Engineer profession specified in Appendix 4 doesn't not really correspond to the program.
3. In some cases the course descriptions differ in English and Latvian

Assessment of the requirement [5] (applicable only to master's or doctoral study programmes)

1 R5 - The study programme for obtaining a master's or doctoral degree is based on the achievements and findings of the respective field of science or field of artistic creation.

   Assessment of compliance: Not relevant

   N/A

2.3. Resources and Provision of the Study Programme

Analysis

2.3.1. According to SAR (p.37), the study program is financed in accordance with the cost of the study programme set by the Cabinet of Minister. (Cabinet of Ministers' Regulation No 994 of 12.12.2006. "Procedures for financing higher education institutions and colleges from state budget funds").

According to SAR (p.40), funding for scientific research comes from several sources: Basic funding for scientific activities granted by the Ministry of Education of the Republic of Latvia (according to the Cabinet of Ministers Regulation No 1316 "Procedure for calculating and granting basic funding to scientific institutions".

According to SAR (p.40), for maintenance of elected scientific staff, scientific infrastructure, as well as partial provision of research work for academic staff, different funding sources are available: Performance funding, funds raised in a competitive procedure (internal grants, project co-financing, projects), as well as the Scientific Activity Development Fund of the Liepaja University.

According to SAR (p.40), there are funds available to support scientific activities of the academic staff: the funding is allocated from the development budget of the LiepU Faculty of Natural Sciences and Engineering and the LiepU Scientific Activities Development Fund.

During the meeting with the academic personnel, the Experts Committee (EC) received indications that not 100% of applications for funding research activities is approved. Approval of applications is a competitive process, the outcomes of which determine such factors as availability of funds and qualitative evaluation of the goals and outcomes of the application against the goals of the academic unit (faculty/institute).

During the meeting with the academic personnel, the Experts received indications that the academic staff may lack information on availability of budget for the provision of work support equipment (laptops).

2.3.2.N/A

2.3.3. According to SAR (p.37), the study program is financed in accordance with the cost of the study programme set by the Cabinet of Minister. (Cabinet of Ministers' Regulation No 994 of 12.12.2006. "Procedures for financing higher education institutions and colleges from state budget funds").

According to SAR (p.41), the Director of Finance and Personnel ensures that the persons preparing the budget shall act in accordance with the instruction "Planning, Execution and Control of the Liepaja University Core Budget" during the budget planning and execution process. Budget planning is carried out in accordance with the QMS procedure A-2-1 "Core Budget Planning", and execution and control in accordance with procedure A-2-2 "Execution and Control of the Core Budget."

According to SAR (p.40), allocation of cost within the program is done according to the actual needs of the program and in consideration of the development strategy of LiepU.

According to SAR (p.37), the financial resources available to the study program consist of the state budget subsidy (the majority of the budget income) and own income (tuition fees).

According to SAR (p.37), the amount of tuition fee and the payment procedure for each academic year shall be determined and approved by the LiepU Council.

The calculation of the projected costs of the professional bachelor study programme "Smart technologies and Mechatronics" for full-time study for the period 2021-2022 is based on the base costs for 2021 (EUR 1,630.11 per one study place) and the coefficient of the thematic area of education "Engineering science" established by the Ministry of Education and Science: 1.7, as well as the cost coefficient for professional bachelor-level study programmes: 1.0 The cost per study place in 2022 is EUR 2 771.19 (SAR, p.214).

According to SAR (p.214), the approved tuition fee for full-time study for the first year of the

academic year 2022/2023 is EUR 2,220 (in English - EUR 2,700) and it is fixed for the whole study period, the total tuition fee for 4 years is EUR 8,880 (in English - EUR 10,800).

SAR provides different numbers for the minimum number of students per course for full-time study: 12 students on p.214 and 10 on p.38.

SAR (p.197) provides different numbers of enrolled students. SAR reports 11 students enrolled in the professional bachelor's study programme "Smart Technologies and Mechatronics " in Latvian study program. No English study program enrollment reported. On the same page, SAR reports 12 students enrolled in the first year and 4 students from the previous study programme "Mechatronics" who continued their studies in the second year of the programme "Smart Technologies and Mechatronics ". There are no students in higher courses or graduates yet. The actual number of enrolled students is unclear, as is the minimum number of the students for the financially profitable implementation of the study program.

Conclusions on this set of criteria, by specifying strengths and weaknesses

Given the procedures reported in SAR, and not having identified facts proving otherwise during the Experts' visit to HEI, it can be concluded that the study provision, scientific provision, informative provision (including library), material and technical provision and financial provision comply with specific features and the conditions for the implementation of the study programme, create prerequisites for the achievement of the learning outcomes and indicate the possibility to ensure a high-quality study process.

At the same time, during the meeting with academic staff it was brought to the Experts's knowledge, that not 100% of applications for funding research activities are approved, and that the teaching staff is not aware of the possibility to obtain a personal laptop for the delivery of work-related tasks.

Given the procedures reported in SAR, and not having identified facts proving otherwise during the Experts' visit to HEI, it can be concluded that the funding available to the study programme, funding sources and the use of funding ensures full implementation of the study process, the study programme has the minimum number of students to ensure the profitability of the study programme and facilitates the development of the study program.

Strengths:
1. good material and technical base;
2. great opportunities to use Internet, library electronic data bases
3. sufficient financial provision.

Weaknesses:
1. Low number of students: 11 students enrolled (SAR, p.197).

Assessment of the requirement [6]

1 R6 - Compliance of the study provision, science provision (if applicable), informative provision (including library), material and technical provision and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of learning outcomes

Assessment of compliance: Fully compliant

The study provision, scientific provision, informative provision (including library), material and technical provision and financial provision comply with specific features and the conditions for the implementation of the study programme, create prerequisites for the achievement of the learning outcomes and indicate the possibility to ensure a high-quality study process

2.4. Teaching Staff

Analysis

2.4.1. SAR (p. 216) indicates that the composition of the academic staff working in the study programme complies with the Law on Higher Education Institutions and the Cabinet of Ministers Regulation No. 512. The qualifications of the academic staff involved in implementation of the study programme are appropriate to the specifics of the study programme and the conditions of its implementation, as well as to the requirements of regulatory enactments in the field of engineering sciences and other regulatory documents (e.g. "Regulations on elections to academic positions", "Criteria for the evaluation of professional qualifications of academic staff for courses" (available at kvs.liepu.lv).

SAR also states that teachers are professionals in their field, who have demonstrated their expertise in research and the study process, as well as participating in international projects and developing teaching tools and materials. The study programme also involves professionals in their specialities with practical work experience in their field, mainly in courses related to engineering, design, and materials science (p. 216).

The study programme involves 24 faculty members in total and guest lecturers. 11 of faculty members have doctoral degrees (46%), and 13 have master's degrees (54%). Two are guest lecturers (8% of the total number of lecturers in the programme) (SAR, p. 216).

There are 15 (63%) elected faculty members and nine (37%) non-elected faculty members involved in the implementation of the study programme. Of the 15 elected faculty members, four are professors (27%) and five are associate professors (33%, all with PhD degrees in various fields). There are four faculty members involved in the implementation of the study programme at Ventspils University of Applied Science (VUAS) - one with a PhD degree (25%) and three with a Master's degree (75%), of whom two are lecturers (50%) and two assistant professors (50%), two elected (50%) and two non-elected (50%) (SAR, p. 216).

In general, the study programme involves competent lecturers who are interested in promoting the acquisition of students' knowledge, skills and professional competence. The interviews with staff members, students and employers confirmed this statement. However, interviews with students and graduates showed that several courses in this study programme need updating and that the title of the programme and its content are inconsistent.

2.4.2. In order to ensure high-quality and innovative implementation of the study programme, several criteria are used for the selection of the academic staff to be involved in programme, making sure that the courses are taught by qualified, scientifically, and methodologically prepared instructors, specialists in the field of study, who use modern approaches in their work (SAR, p. 48).

The mandatory criteria for selecting the teaching staff are: 1) the qualifications of teaching staff meet the requirements set by applicable laws and regulations; 2) research area/interest relevant to the study programme/course; 3) appropriate knowledge of the official language and of foreign languages (SAR, p. 48).

The selection of teaching staff for the implementation of study programmes is based on the 'Criteria for the evaluation of professional qualifications of academic staff for courses' (Approved byLiepU Study Council on 13 June 2005; available at kvs.liepu.lv).

The assessment criteria are described in detail in SAR (p. 48) and include doctoral or master degree appropriate to the course taught or one in a related field, and publications in a sub-discipline or field of artistic creativity. The requirements set for the candidates for a teaching position are set in accordance with the Liepaja University "Regulations on elections to academic positions". The requirements for the selection and participation of foreign teaching staff in the teaching of study programmes are specified in the Liepaja University Academic Staff Development Plan for 2018–2022 (SAR, p. 48). According to the Law on Higher Education Institutions, and the Liepaja University 'Regulations on elections to academic positions' of 20 June 201, residents of the Republic of Latvia and foreign citizens can be elected to academic positions, and their election to academic positions is governed by these regulatory documents (SAR, p. 48).

Due to the short duration of the programme, there have been no major changes in the compositionof the teaching staff. The only adjustment was the vaccination requirement during the Covid-19 pandemic, when some teachers had to be replaced by others with equivalent training and experience (SAR, p. 216).

It was evident that the necessary procedures for recruitment of staff have been established, the dialogue on the expected learning outcomes in study courses has been maintained. Based on documentation and interviews with management and faculty, it can be argued that the University has developed procedures for staff engagement and/or employment processes.

2.4.4. Each member of the academic staff in the last six years has published in peer-reviewed editions, including international editions (if the staff member has worked for a shorter period, the number of publications should be indicated in proportion to the period worked) or artistic achievements (for example, exhibitions, films, theater performances and concerts) or five years of practical experience (except for experience in the implementation of the study programme) in accordance with the Law on Higher Education Institutions.

Each member of the academic staff in the last six years has published in peer-reviewed editions, including international editions.

2.4.5.The teaching staff employed in the study programme cooperate in the development of the content of both the professional specialization and theoretical courses in the field of study and in the exchange of information on current developments in the field and in the study process. Most courses and modules are designed with several lecturers per course, working on a shared workload which improves the exchange of information within the course and increases the possibilities to cover for each other in case of illness, travel or other unforeseen circumstances (SAR, p. 217).

The faculty members employed in the study programme cooperate in the development and implementation of joint research and projects and in the exchange of information on current events in the field by meeting at various exhibitions, events, international conferences, seminars and other networking events held within the field. Information exchange is ensured by regular meetings of the teaching staff at meetings organized by the Faculty and meetings within the framework of research activities at scientific institutes (SAR, p. 218). Interviews with academic staff confirmed that there are regular meetings to exchange information and academic staff share information about the content of their courses and the teaching methods they use.

Conclusions on this set of criteria, by indicating strengths and weaknesses

The study programme employs competent academic staff for the implementationof the study programme. There is a conviction that the study process is successfully implemented in the institution. In turn, the views expressed during the meeting with students and graduates show that especially in this study programme not all courses contain the latest scientific trends and need modernization. The title of the programme and its content are inconsistent. In addition, it stood out that the academic staff do not use all the possibilities of the learning management system Moodle and the possibilities of modern technology (e.g. learning analytics, badges, online whiteboards, etc.). The courses in the Moodle need better structuring and updating. The teaching workload of academic staff is an obstacle for methodological and technological innovation.

Strengths:
1. The qualification of the teaching staff involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments.
2. There is a conviction that the study process is successfully implemented in the institution.
3. Competencies of academic staff of the study field are generally high, but there are exceptions.
4. The study programme management, lecturers, and support staff work as a team.
5. In the pandemic situation, the University and academic staff quickly reorganized its work into a distance learning mode.

Weaknesses:
1. The title of the programme and its content are inconsistent.
2. Innovative solutions (methodological and technological innovation) are not implemented in the study process despite the fact that e-learning is a field of study in the study field, no innovation in the use of learning methods or technology stood out (e.g. innovative learning design models, learning analytics, open digital badges, online whiteboards).
3. The courses in the Moodle are not well structured and contain outdated information.
4. The available possibilities of the Moodle are not fully used.
5. The teaching workload of academic staff is an obstacle for methodological and technological innovation.
6. The course level is uneven in the study programme and several courses need to be modernized.

Assessment of the requirement [7]

1 R7 - Compliance of the qualification of the academic staff and visiting professors, visiting associate professors, visiting docents, visiting lecturers and visiting assistants with the conditions for the implementation of the study programme and the requirements set out in the respective regulatory enactments.

   Assessment of compliance: Fully compliant

   The qualification of academic staff staff complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments.

2.5. Assessment of the Compliance

Requirements

1 1 - The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard

Assessment of compliance: Fully compliant

Annex 3 confirms that the study program complies with Cabinet Regulation No. 512 "Noteikumi par otrā līmeņa profesionālās augstākās izglītības valsts standartu"

2 2 - The study programme complies with a valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided if the completion of the study programme leads to a professional qualification (if applicable)

Assessment of compliance: Partially compliant

Annex 4 ("ANNEX 4.docx") confirms that the programme is only partly compliant with the standard of profession of the Mechatronics engineer. Disproportionately large amounts of required skills and competences are mapped against few study courses casting doubt of possibility to achieve these results given limited course amount. Learning outcomes of mapped courses does not match the requirements of professional standard.

3 3 - The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 561 , Paragraph two and Section 562 , Paragraph two of the Law on Higher Education Institutions.

Assessment of compliance: Fully compliant

Attached study course descriptions (Annex 10) complies with regulations set forth in Law on Higher Education Institutions.

4 4 - The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure according to which state recognised documents of higher education are issued.

Assessment of compliance: Fully compliant

The provided Diploma sample complies with the procedure by which state-recognised documents of higher education are issued according to MK No. 202 "Kārtība, kādā izsniedz valsts atzītus augstāko izglītību apliecinošus dokumentus"

5 5 - The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions.

Assessment of compliance: Not relevant

6 6 - Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Higher Education Institutions.

Assessment of compliance: Not relevant

7 7 - At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts (if applicable).

Assessment of compliance: Not relevant

8   8 - The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

Assessment of compliance: Fully compliant

Attached resumes of staff and LiepU confirmation letter Nr. 7.D7.10./57 verifies that state language proficiency is compliant with MK. Nr. 733 "Noteikumi par valsts valodas zināšanu apjomu, valsts valodas prasmes pārbaudes kārtību un valsts nodevu par valsts valodas prasmes pārbaudi".

9   9 - The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language (if applicable).

Assessment of compliance: Fully compliant

Attached resumes of staff and LiepU confirmation letter Nr. 7.D7.10./55 verifies that language proficiency in English is at least B2.

10 10 - The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

Assessment of compliance: Fully compliant

Sample of attached study agreement complies with MK. Nr. 70 "Studiju līgumā obligāti ietveramie noteikumi".

11 11 - The higher education institution / college has provided confirmation that students will be provided with opportunities to continue their education in another study programme or another higher education institution or college (agreement with another accredited higher education institution or college) if the implementation of the study programme is terminated.

Assessment of compliance: Fully compliant

LiepU confirmation letter 7.D-7.10/71 indicates that there is agreement in place with Vidzeme University of Applied Sciences (Nr. 1.-2020/89) affirming possibility to continue studies in professional bachelor programme "Mechatronics"

12 12 - The higher education institution / college has provided confirmation that students are guaranteed compensation for losses if the study programme is not accredited or the study programme's license is revoked due to the actions (actions or omissions) of the higher education institution or college and the student does not wish to continue studies in another study programme.

Assessment of compliance: Fully compliant

LiepU confirmation letter Nr. 1.-1.6./245 states, that students are guaranteed compensation for losses if the study programme is not accredited or the licence of the study programme is revoked due to the actions of the college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

13 13 - The joint study programmes comply with the requirements prescribed in Section 55.(1), Paragraphs one, two, and seven of the Law on Higher Education Institutions (if applicable)

Assessment of compliance: Fully compliant

Annex 2 confirms that the study programme is compliant with requirements set forth by law within 4.07.2022. amendments.

14 14 - Compliance with the requirements specified in other regulatory enactments that apply to the study programme being assessed (if applicable)

Assessment of compliance: Not relevant

Assessment of the requirement [8]

1 R8 - Compliance of the study programme with the requirements set forth in the Law on Higher Education Institutions and other regulatory enactments.

Assessment of compliance: Partially compliant

Study programme is only partly compliant with the standard of profession of the Mechatronics Engineer as study outcomes from mapped courses does not fully account for necessary skills and competences required by professional standard.

General conclusions about the study programme, indicating the most important strengths and weaknesses of the study programme

Study programme is only partly compliant with the standard of profession of the Mechatronics Engineer as study outcomes from mapped courses does not fully account for necessary skills and competences required by professional standard.

The experts conclude that the requirements towards the study program are fulfilled.

No major deficiencies which could not be eliminated during the 2-year accreditation period were identified.

The study program can continue to be implemented in all declared implementation options, in all applied implementation languages and in all applied implementation places.

One specific concern is the program Mechatronics jointly implemented with Ventspils University College (VeA). The motivation for implementing the program is unclear. What human or technical resources are missing at LiepU to justify the joint program?

During the meetings with Staff and students, the only justification was provided - one specific laboratory (equipment). Why can not this laboratory be implemented at LiepU?

The experts identify the most important weaknesses and strengths identified in the study programme.

Strengths:
1. the program has well-covered content with robot control and the Internet of Things in the Information Technology module
2. study module at Ventspils University of Applied Sciences
3. good material and technical base;
4. great opportunities to use Internet, library electronic data bases
5. sufficient financial provision.
6. The qualification of the teaching staff involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments.
7. There is a conviction that the study process is successfully implemented in the institution.

8. Competencies of academic staff of the study field are generally high, but there are exceptions.

9. The study programme management, lecturers, and support staff work as a team.

10. In the pandemic situation, the University and academic staff quickly reorganized its work into a distance learning mode.

Weaknesses:

1. there is an insufficient amount of courses in the field of Mechatronics, especially regarding industrial mechatronic systems and their control (PLC), which is an essential competence of a Mechatronics engineer.

2. The compliance with the standard of the Mechatronics Engineer profession specified in Appendix 4 doesn't not really correspond to the program.

3. In some cases the course descriptions differ in English and Latvian

4. Low number of students: 11 students enrolled (SAR, p.197).

5. The title of the programme and its content are inconsistent.

6. Innovative solutions (methodological and technological innovation) are implemented in the study process to a small extent despite the fact that e-learning is a field of study in the study field, no innovation in the use of learning methods or technology stood out (e.g. innovative learning design models, learning analytics, open digital badges, online whiteboards).

7. The courses in the Moodle are not well structured and contain outdated information.

8. The available possibilities of the Moodle are not fully used.

9. The teaching workload of academic staff is an obstacle for methodological and technological innovation.

10. The course level is uneven in the study programme and several courses need to be modernized.

Evaluation of the study programme "Smart Technologies and Mechatronics"

Evaluation of the study programme:

Average

2.6. Recommendations for the Study Programme "Smart Technologies and Mechatronics"

Short-term recommendations

1. Carry out a qualitative and correct study program compliance analysis against the professional standard.
2. Provide the same course descriptions in both languages (for example, for the course Production Engineering I, II, III).
3. Clean up and systematize the presentation of information in Moodle.
4. Prepare a plan/feasibility study for purchasing the equipment used in the study program at VeA to be installed at LiepU

Long-term recommendations

1. Provide a minimum of 4 credit point course with more practical content in industrial mechatronic systems.

2. Introduce innovative solutions (methodological and technological innovation) in the study process to a larger extent : use the knowledge produced in e-technologies doctoral program (e.g. innovative learning design models) and the tools offered by Moodle (learning analytics, open digital badges, online whiteboards).

3. Evaluate the possibilities to lower the teaching load of the academic stuff against the possibility for the teaching staff to engage in methodological and technological development of and innovation in their teaching.

4. Re-evaluate the consistency of the volume of different courses within the program.

5. Make sure courses with are related to fast-changing technologies and environments are kept up-to-date.

6. Develop the necessary material and technical base to enable the study program to be implemented at LiepU without the need for students to regularly travel to VeA (i.e., if joint programs are valued for some reasons, find different forms to implement the program, which do not require regular traveling of students: e.g., make the teaching personnel travel, or make the students travel less regular / less frequent.

II - "Computer Science" ASSESSMENT

2.1. Indicators Describing the Study Programme

Analysis

2.1.1, 2.1.2.
The study programme "Computer science '' is an academic bachelor study programme with the goal to prepare competitive specialists within the field, it must be highlighted that the study programme is really similar to professional bachelor study programme "Information technology". Degree to be obtained is a Bachelor of Natural Sciences in Computer Science. Classification code (IKK) is 43484. Following this code 484 corresponds to the "Programming" subsection under the thematic field of "Computing" and 42 corresponds to academic bachelor higher education. The length and study mode is full time 3 years and the structure of studies is in accordance with relevant standards of education.

Study language is in Latvian and English: studies are organized in two language groups with identical main curriculum. Since 2018 only the English study programme is being implemented - there is only english language group. Admission requirements for English language programme is IELTS 6+, TOEFL IBT 78+ or TOEFL paper based test 547. Also English and Mathematics grades (at least 60%) is considered from high school graduation certificate. For Latvian language programme admission requirements are CE in mathematics, latvian and foreign language. High school grade in informatics or programming, algebra or mathematics, physics or nature sciences.

The goal of the bachelor study program is to provide "academic education in the field of computer science and information technology, providing the opportunity to obtain higher education, retraining and further education, which allows to fully function in education, culture, science and other fields in the dynamic conditions of democracy, communication, competition, information and culture in the interests of the Latvian state and the Latvian people."

According to SAR the results of the bachelor study program are:

1. The general skills have been acquired which are necessary to be able manage teamwork, plan the work, present the IT solutions and the results of the work done in Latvian and English.

2. The common knowledge of the information technology industry on the design of computer systems and the basic principles for building them, IT applications for natural, technical, and social process solutions, national and international standards of the IT industry and IT industry terms in Latvian and English, as well as advanced skills for the use of acquired knowledge in practice, has been acquired.

3. Methods and technologies for programming, development and maintenance of computer systems have been learned.

4. The skills needed to carry out independent research in the information technology sector have been acquired and developed.

5. Special skills have been acquired and developed in the profession of programming engineer required to perform professional duties – coding, design, software maintenance, software deployment, software testing, specification of requirements, preparation of user documentation and software project planning.

The study program both by its title, degree, qualification and curriculum is consistent with the study field "Information technologies, computer engineering, electronics, telecommunications, computer management and computer science". The title, code, degree and obtainable qualification are interrelated and coherent and fall within the scope of the general aims of the study programme.

2.1.3.

As indicated by University similarly to Information Technology bachelor programme there have been no changes to the study programme aims and objectives during the previous reporting period. Content of certain courses has been updated or replaced with more relevant topics in regards to technology trends. In total 7 courses have been changed or replaced. Major change as noted by University in SER 3.1. made in preparation of evaluation is introduction of study modules (sets of courses) – each module is in 10 CP (or 15 ECTS) amount. Changes made to the study process and curriculum are justified.

2.1.4.

At this moment there are a total of 18 students studying in english language programme. Since 2018 there is no students in latvian language programme. There seems to be a lack of comprehensive graduate data collection by the University, therefore there is no reliable statistical data available for student employment after graduation. However in SAR 3.1.3 University notes that graduates have wide opportunities to find a job in IT companies. There are 84 Information Technology companies working in Liepāja. After their studies, most international students return to their home country, where they start working in local IT companies or in a well-paid position in government institutions as IT specialists. Some international graduates go to other countries of the European Union to start either their Master's studies or their professional careers in IT companies. However, given the specifics of industry, it is common knowledge that specialists within this field are in high-demand even without comprehensive graduate data to support this statement. In general, the study programme is economically justified. Student dynamics are reasonably well.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The title, code, degree and obtainable qualification are interrelated and coherent and fall within the scope of the general aims of the study programme and study field.

Strengths:
1. Study programme fulfills a valuable economic role in providing industry with software development specialists.

Weaknesses:
1. University does not collect data regarding employment of graduates.

2.2. The Content of Studies and Implementation Thereof

Analysis

2.2.1.The study program is almost identical to the Information Technology professional study program. And similar to that program, this study program is also well balanced between the necessary basic knowledge, skills and competences required when working in the field of information technology and are determined according to the achievable results of the study program and the latest scientific trends in the field.

The content of the program is relevant to the field of the relevant industry and labor market. The study program teaches (According to course descriptions) the 5 most used programming languages (According to Stack Overflow's 2020 Developer Survey) such as JavaScript, HTML/CSS, SQL, Python, and Java.
The study program and its content correspond to the latest scientific trends in this field. The elective modules of the study program provide a versatile insight into the latest scientific trends. For example, such courses as "Introduction to Artificial Intelligence", "Computer Vision", " Robot control", and "Internet of thing II" are offered.

The study plan is based on the module principle. Most of the study courses are included in 10 credit points (or 15 ECTS) modules, where each of them ends with a module project. The content of study courses is interconnected and complementary. For example, the second-year course "Programming Languages" takes into account and accordingly requires the necessary prior knowledge from the courses of the "Software Engineering I" module. (According to course descriptions and study plan)
Although the aim of the study program is not provided, it can be mentioned that the study program corresponds to the field of study "Information technologies, computer engineering, electronics, telecommunications, computer management and computer science". The provided table in Appendix 6 indicates the compliance of the study program with the requirements of Cabinet Regulations No. 512 "Regulations on the National Standard for the Second Level Professional Higher Education".

2.2.2. N/A

2.2.3.The report mentions what generally accepted basic principles are followed when evaluating the learning of the program. In the report and the descriptions of the study courses, the standard teaching style is mostly observed - lecture and practical work or seminars. The main forms of testing students' knowledge are tests, quizzes, seminars, discussions, study papers, etc.

The report states that to ensure a student-centred approach, the final assessment in the study program is mostly made up of a cumulative assessment, including the student's work throughout the study. The use of a project-based learning approach during studies is commendable. First and second year study projects are developed by students in teams, usually 3-4 members each. On the other hand, in the third year, study projects are individually developed.

But despite this, during the visit, the lack of innovative teaching methods is observed in conversations with students, management and academic staff. In some cases, even students mention the need to renew outdated course content (for example, machine learning, and programming). In this case, it could also indicate the need for more innovative teaching methods. The English language student flow is mainly provided with the same teaching methods as the Latvian flow, but in some cases, graduates of the study program indicate in the interview the deficiencies in the English language teaching materials.

Overall the implementation methods mostly ensure the achievement of defined learning outcomes.

2.2.4. N/A

2.2.5. N/A

2.2.6. According to the SAR (p.105) the results of study programme Computer science are defined:
- The knowledge of computer science and mathematics, which provide understanding of computer science and information technologies, have been learned, and theoretical courses of computer science in all major computer science industries have been learned.
- The common knowledge of the information technology industry on the design of computer systems and the basic principles for building them, IT applications for natural, technical, and social process solutions, national and international standards of the IT industry and IT industry terms in Latvian and English, as well as advanced skills for the use of acquired knowledge in practice, has been acquired.
- Methods and technologies for programming, development and maintenance of computer systems have been learned.
- The skills needed to carry out independent studies in a selected computer science sub-sector have been acquired and developed.
- Knowledge, skills, and expertise in software engineering has been acquired and improved.

The content of the study programme includes Software development, Web-based database system, Software engineering, Computer systems and networks, Applications of artificial intelligence, Smart technologies etc. (SAR, p.114-115).

The bachelor students have chosen topics relevant to the study field that correspond to the study programme (it's results and content), for example:
- Interactive Visualizations for Data Insights (areas Interactive computer systems, Information visualization, Computer graphics)
- Smarthome remote modular system (areas Mobile communication systems, Androids (robots))
- Multi-platform application development (areas Operating systems (computers), Software applications)
Create and manage problem reports in TestLink tool (areas Computer programs, Computer networks).

Conclusions on this set of criteria, by specifying strengths and weaknesses

The study programme complies with the requirements of Cabinet Regulations No. 512.
The study programme is delivered in two languages: Latvian and English.
The content of the programme is relevant to the field of the relevant industry.
The elective modules of the study programme provide a versatile insight into the latest scientific trends.
The content of study courses is interconnected and complementary.

The study programme corresponds to the field of study "Information technologies, computer engineering, electronics, telecommunications, computer management and computer science".

The use of a project-based learning approach during studies is commendable.

The English language student flow is mainly provided with the same teaching methods as the Latvian flow.

The bachelor students have chosen topics relevant to the study field that correspond to the study programme.

Strengths:

1. The study program is well-balanced between the necessary basic knowledge, skills and competencies required to perform the duties of a programming engineer and the latest scientific trends in the field.

2. The content of the program is relevant to the field of the relevant industry.

3. Employers' representatives highly value the program and willingly accept students of the program for internships and jobs.

Weaknesses:

1. Apart from project-based learning approach, innovative methodological and technical teaching solutions are rarely used in the study process. The standard teaching style is mostly observed - lecture and practical work or seminars.

Assessment of the requirement [5] (applicable only to master's or doctoral study programmes)

1 R5 - The study programme for obtaining a master's or doctoral degree is based on the achievements and findings of the respective field of science or field of artistic creation.

   Assessment of compliance: Not relevant

   N/A

2.3. Resources and Provision of the Study Programme

Analysis

2.3.1.According to SAR (p.37), the study program is financed in accordance with the cost of the study programme set by the Cabinet of Minister. (Cabinet of Ministers' Regulation No 994 of 12.12.2006. "Procedures for financing higher education institutions and colleges from state budget funds").

According to SAR (p.40), funding for scientific research comes from several sources: Basic funding for scientific activities granted by the Ministry of Education of the Republic of Latvia (according to the Cabinet of Ministers Regulation No 1316 "Procedure for calculating and granting basic funding to scientific institutions".

According to SAR (p.40), for maintenance of elected scientific staff, scientific infrastructure, as well as partial provision of research work for academic staff, different funding sources are available: Performance funding, funds raised in a competitive procedure (internal grants, project co-financing, projects), as well as the Scientific Activity Development Fund of the Liepaja University.

According to SAR (p.40), there are funds available to support scientific activities of the academic staff: the funding is allocated from the development budget of the LiepU Faculty of Natural Sciences

and Engineering and the LiepU Scientific Activities Development Fund.

During the meeting with the academic personnel, the Experts Committee (EC) received indications that not 100% of applications for funding research activities is approved. Approval of applications is a competitive process, the outcomes of which determine such factors as availability of funds and qualitative evaluation of the goals and outcomes of the application against the goals of the academic unit (faculty/institute).

During the meeting with the academic personnel, the Experts received indications that the academic staff may lack information on availability of budget for the provision of work support equipment (laptops).

2.3.2. N/A

2.3.3.
According to SAR (p.37), the study program is financed in accordance with the cost of the study programme set by the Cabinet of Minister. (Cabinet of Ministers' Regulation No 994 of 12.12.2006. "Procedures for financing higher education institutions and colleges from state budget funds").

According to SAR (p.41), the Director of Finance and Personnel ensures that the persons preparing the budget shall act in accordance with the instruction "Planning, Execution and Control of the Liepaja University Core Budget" during the budget planning and execution process. Budget planning is carried out in accordance with the QMS procedure A-2-1 "Core Budget Planning", and execution and control in accordance with procedure A-2-2 "Execution and Control of the Core Budget."

According to SAR (p.40), allocation of cost within the program is done according to the actual needs of the program and in consideration of the development strategy of LiepU.

According to SAR (p.37), the financial resources available to the study program consist of the state budget subsidy (the majority of the budget income) and own income (tuition fees).

According to SAR (p.37), the amount of tuition fee and the payment procedure for each academic year shall be determined and approved by the LiepU Council.

According to SAR (p.37), the provision of financial resources is stable. The base cost per state-funded study place is set at EUR 1,630.11 in 2022. The tuition fee for the full-time academic Bachelor's study programme "Computer Science" in English was increased from EUR 2,200 to EUR 2,500.

The calculation of the projected costs of the academic bachelor study programme "Computer science" for full-time study for the period 2021-2022 is based on the base costs for 2021 and 2022 (EUR 1,630.11 per one study place) and the coefficient of the thematic area of education "Computer science" established by the Ministry of Education and Science: 1.5, as well as the cost coefficient for professional bachelor-level study programmes: 1.0 The cost per study place in 2022 is EUR 2 445.17.

According to SAR (p.112), in the spring of 2022, 18 students are studying in the academic bachelor's study program "Computer Science" (all of them in English). The number of students since year 2013 has been changing from the high 43 in the first year of the program (2013) to the lowest 10 in 2019, recovering to 18 in the last reported year of 2021.

In the period from 2013 to 2021, the number of newly enrolled students was under 10 with the exception of 2013 (10), 2017 (12) and 2018 (11), reaching 9 in 2021.

The SAR reported (p.38) minimum number of students per course is 10.

Conclusions on this set of criteria, by specifying strengths and weaknesses

Conclusions
Given the procedures reported in SAR, and not having identified facts proving otherwise during the Experts' visit to HEI, it can be concluded that the study provision, scientific provision, informative provision (including library), material and technical provision comply with specific features and the conditions for the implementation of the study programme, create prerequisites for the achievement of the learning outcomes and indicate the possibility to ensure a high-quality study process.

With regard to the financial provision, it must be noted that the study programme does not have the minimum number of students to ensure the profitability of the study programme. The SAR reported (p.38) minimum number of students per course is 10, whereas this number for new enrollments was reached only in 2017 (12) and 2018 (11), while all other years falling far below (1 in 2015, 4 in 2019, as per SAR, p.112). It can be concluded, that the program is not financially profitable.

At the same time, given the procedures reported in SAR, and not having identified facts proving otherwise during the Experts' visit to HEI, it can be concluded that the funding available to the study programme, funding sources and the use of funding ensures full implementation of the study process.

Another note with regard to the financial provision was brought to the Experts's attention during the meeting with academic staff: not 100% of applications for funding research activities are approved, and that the teaching staff is not aware of the possibility to obtain a personal laptop for the delivery of work-related tasks.

The low graduation rate must be noted. According to SAR (p112): The program "Computer science" was launched in 2013, starting with 43 students of which 10 were in the 1st year and 9 were graduating. From 2013 till 2021, total 64 students were enrolled in the 1st year, adding up with the 43 "inherited" program students to 107. At the same time period, only 28 students have graduated.

SAR (p.113) notes the low graduation rate with the following: "It must be admitted that there is a rather large number of excluded students among the international students. The main reasons are – lack of motivation, lack of prior knowledge (secondary education level), cultural differences (attitude, habits etc.)."

Strengths:
1. good material and technical base;
2. great opportunities to use Internet, library electronic data bases.

Weaknesses:
1. The study programme does not have the minimum number of students to ensure the profitability of the study programme;
2. High drop-out rate / low graduation rate.

Assessment of the requirement [6]

1 R6 - Compliance of the study provision, science provision (if applicable), informative provision (including library), material and technical provision and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of learning outcomes

Assessment of compliance: Fully compliant

The number of students in the program below the set minimum for financial profitability of the program.

Apart from the low number of students, the study provision, science provision, informative provision (including library), material and technical provision comply with the conditions for the implementation of the study programme and ensuring the achievement of learning outcomes.

2.4. Teaching Staff

Analysis

2.4.1.
The SAR (p. 121) indicates that all academic staff including visiting teaching staff involved in the study programme comply with the conditions for the implementation of the study programme and the requirements of the regulatory enactments (e.g. the Law on Higher Education Institutions, "Regulations on elections to academic positions", "Criteria for the evaluation of professional qualifications of academic staff for courses" (available at kvs.liepu.lv). The qualification level of the academic staff involved in the implementation of the study programme by study year is presented in Table 3.4.1.1 (SAR, p. 121). All lecturers have a Master's or a Doctoral degree. According to Table 3.4.1.1., the number of teaching staff with a doctorate degree has increased slightly in the last four years, while the number of teaching staff with a master's degree has decreased. In the last three years, the proportion of teaching staff with a master's degree has been stable at 68%, and the proportion of teaching staff with a doctorate degree at 32%. Most of the teaching staff have a Master's or Doctoral degree in computer science or information technology. Some associate professors have degrees in pedagogy or educational sciences, specializing in teaching methods in informatics, mathematics or physics. Associate professors of general education courses have a master's or doctoral degree in social sciences. The qualifications of the teaching staff ensure the competence necessary to prepare and conduct classes and to organize independent study work to support students' professional development. Visiting lecturers from abroad add an international dimension to the study programme. IT professionals invited from companies supplement the study programme with their practical work experience (SAR, pp. 121-122).

The number of elected academic staff members in the study program varies slightly from year to year, but it is around 25%. In the 2021/22 academic year, nine elected academic staff members worked in the study program, including one professor, one leading researcher, three assistant professors, four lecturers, and one visiting professor from Bulgaria. Other involved academic staff are specialists from IT companies or trainers from other educational institutions (SAR, p. 122).

At the time of submission of the self-assessment report, the academic bachelor's study programme "Computer Science" involved 19 teaching staff members for 14 students. Most of the study courses are organized in a joint stream with foreign students of the professional bachelor's study programme "Information Technology", of which there are 24 students (SAR, p. 123).

Both SAR and the interviews with students, graduates, employers and lecturers make it possible to state that the study programme involves competent lecturers who are interested in promoting the

acquisition of students' knowledge, skills and professional competence.

2.4.2.It is noted in SAR that in order to ensure high-quality and innovative implementation of the study programme, several criteria are used for the selection of the academic staff to be involved in the study programme, making sure that the courses are taught by qualified, scientifically, and methodologically prepared instructors, specialists in the field of study, who use modern approaches in their work (p. 48).

According to the Law on Higher Education Institutions, and the Liepaja University "Regulations on elections to academic positions", residents of the Republic of Latvia and foreign citizens can be elected to academic positions, and their election to academic positions is governed by these regulatory documents (SAR, p. 48). The requirements for the selection and participation of foreign teaching staff in the teaching of study programmes are specified in the Liepaja University Academic Staff Development Plan for 2018–2022 (SAR, p. 48).

The selection of teaching staff for the implementation of study programmes is based on the "Criteria for the evaluation of professional qualifications of academic staff for courses". The mandatory criteria for selecting the teaching staff are: 1) the qualifications of the teaching staff meet the requirements set by applicable laws and regulations; 2) research area/interest is relevant to the study programme/course; 3) appropriate knowledge of the official language and of foreign languages (SAR, p. 48).

The assessment criteria of teaching staff are described in detail in SAR (p. 48) and include doctoral or master degree appropriate to the course taught or one in a related field, and publications in a sub-discipline or field of artistic creativity. The requirements set for the candidates for a teaching position are set in accordance with the Liepaja University "Regulations on elections to academic positions".

Changes in the composition of the teaching staff are mainly due to generational changes. In most cases, the changes have taken place gradually, the successors of the courses have been provided with consultations by experienced colleagues. Thus, the quality of studies has not been significantly affected (SAR, p. 122). The study programme involves several LiepU IT Master's graduates and doctoral students. In several cases, when an experienced lecturer has left due to illness, the courses have been smoothly taken over by other colleagues. Two lecturers are defending their doctoral theses in the near future (SAR, p. 122)..

Based on analyzed documentation and interviews with both students and lecturers, it was evident that the necessary procedures for recruitment and evaluation of staff have been established, the dialogue on the expected learning outcomes in study courses has been maintained. In case of unexpected events, the continuity of teaching courses is guaranteed. It was evident that the University and the Faculty have developed procedures for staff engagement and employment processes.

2.4.3. N/A

2.4.4.
Each member of the academic staff in the last six years has published in peer-reviewed editions, including international editions (if the staff member has worked for a shorter period, the number of publications should be indicated in proportion to the period worked) or artistic achievements (for example, exhibitions, films, theater performances and concerts) or five years of practical experience

(except for experience in the implementation of the study programme) in accordance with the Law on Higher Education Institutions.

Each member of the academic staff in the last six years has published in peer-reviewed editions, including international editions.

2.4.5.
The teaching staff employed in the study programme cooperate in the development and implementation of joint research and projects, as well as in the development ofthe content of joint professional specialization and theoretical courses in the field of study and inthe exchange of information on current developments in the field and in the study process. They exchange information on current developments in the field through meetings at various industry exhibitions, international conferences, seminars and other networking events. Information exchange is ensured by regular meetings of the teaching staff at meetings organized by the Faculty and meetings within the framework of research activities at scientific institutes (SAR, p. 123).

The Faculty has historically developed a good culture of internal collaboration. However, no formal mechanism has been developed for the promotion of mutual cooperation between academic staff (SAR, p. 183). Interviews with academic staff confirmed that there are regular meetings to exchange information and that academic staff share information about the content of their courses, teaching, learning and assessment methods they use and about student progress.

Conclusions on this set of criteria, by indicating strengths and weaknesses

The qualification of the teaching staff involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments. The study programme employs enthusiastic and competent academic staff for the implementation of the study field. There is a conviction that the study process is successfully implemented in the study programme. The views expressed at the meeting with students and graduates, in turn, show that not all courses are taught at a high level and need to be modernized to include the latest scientific results and trends. In addition, it stood out that the academic staff do not use all the possibilities of the learning management system Moodle and the possibilities of modern technology (e.g. learning analytics, badges, online whiteboards, etc.). The courses in the Moodle need better structuring and elimination of outdated information. The teaching workload of academic staff is an obstacle for methodological and technological innovation.

Strengths:
1. The qualification of the teaching staff members involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments.
2. There is a conviction that the study process is successfully implemented in the study programme.
3. Competencies of the academic staff of the study programme are generally high and enable the achievement of the aims and learning outcomes of the study programme and the relevant study courses.
4. The study programme management, lecturers, and support staff work as a team.
5. The academic staff share information about the content of their courses, teaching, learning and assessment methods they use and about student progress.
6. In the pandemic situation, the University and academic staff quickly reorganized their work into a distance learning mode.

Weaknesses:

1. Innovative solutions (methodological and technological innovation) are implemented in the study process to a small extent despite the fact that e-learning is a field of study in the study field, no innovation in the use of learning methods or technology stood out (e.g. innovative learning design models, learning analytics, open digital badges, online whiteboards).

2. The courses in the Moodle are not well structured and contain outdated information.

3. The available possibilities of the Moodle are not fully used.

4. The teaching workload of academic staff is an obstacle for methodological and technological innovation.

5. The course level is uneven in the study programme and several courses need to be modernized.

Assessment of the requirement [7]

1 R7 - Compliance of the qualification of the academic staff and visiting professors, visiting associate professors, visiting docents, visiting lecturers and visiting assistants with the conditions for the implementation of the study programme and the requirements set out in the respective regulatory enactments.

Assessment of compliance: Fully compliant

The qualification of academic staff complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments.

2.5. Assessment of the Compliance

Requirements

1 1 - The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard

Assessment of compliance: Fully compliant

Annex P6 ("P6_AtbilstibaValstsAIstandartam_Bdat_ENG.pdf") confirms that the study program complies with Cabinet Regulation No. 240 "Noteikumi par valsts akadēmiskās izglītības standartu"

2 2 - The study programme complies with a valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided if the completion of the study programme leads to a professional qualification (if applicable)

Assessment of compliance: Not relevant

3 3 - The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 561 , Paragraph two and Section 562 , Paragraph two of the Law on Higher Education Institutions.

Assessment of compliance: Partially compliant

Attached study course descriptions (Annex P10 "P10_kursu_apraksti_Datorzinatnes_EN.pdf") are prepared in latvian and english. There have been cases when study materials for international students are only partially available in english. Descriptions complies with regulations set forth in Law on Higher Education Institutions.

4 4 - The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure according to which state recognised documents of higher education are issued.

Assessment of compliance: Fully compliant

The provided Diploma sample complies with the procedure by which state-recognised documents of higher education are issued according to MK No. 202 "Kārtība, kādā izsniedz valsts atzītus augstāko izglītību apliecinošus dokumentus".

5   5 - The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions.

   Assessment of compliance: Partially compliant

   Attached confirmation indicates involvement of 1 elected professor and 4 leading researchers holding doctoral degree. However law requires involvement in implementation of programme mandatory and elective parts no less than 5 elected professors and/or associated professors.

6   6 - Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Higher Education Institutions.

   Assessment of compliance: Not relevant

   Clause has been removed from law as of 14.07.2022.

7   7 - At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts (if applicable).

   Assessment of compliance: Not relevant

8   8 - The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

   Assessment of compliance: Fully compliant

   Attached resumes of staff and LiepU confirmation letter Nr. 7.D7.10./57 verifies that state language proficiency is compliant with MK. Nr. 733 "Noteikumi par valsts valodas zināšanu apjomu, valsts valodas prasmes pārbaudes kārtību un valsts nodevu par valsts valodas prasmes pārbaudi".

9   9 - The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language (if applicable).

   Assessment of compliance: Fully compliant

   Attached resumes of staff and LiepU confirmation letter Nr. 7.D7.10./55 verifies that language proficiency in English is at least B2.

10 10 - The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

   Assessment of compliance: Fully compliant

   Sample of attached study agreement complies with MK. Nr. 70 "Studiju līgumā obligāti

ietveramie noteikumi".

11 11 - The higher education institution / college has provided confirmation that students will be provided with opportunities to continue their education in another study programme or another higher education institution or college (agreement with another accredited higher education institution or college) if the implementation of the study programme is terminated.

Assessment of compliance: Fully compliant

Attached contract Nr. 1.-2022/207 with Latvia University of Life Sciences and Technologies confirms that institution provides possibility to continue studies within academic bachelor programme "Computer Control and Computer Systems". Including students of english language programme.

12 12 - The higher education institution / college has provided confirmation that students are guaranteed compensation for losses if the study programme is not accredited or the study programme's license is revoked due to the actions (actions or omissions) of the higher education institution or college and the student does not wish to continue studies in another study programme.

Assessment of compliance: Fully compliant

LiepU confirmation letter Nr. 1.-1.6./245 states, that students are guaranteed compensation for losses if the study programme is not accredited or the licence of the study programme is revoked due to the actions of the college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

13 13 - The joint study programmes comply with the requirements prescribed in Section 55.(1), Paragraphs one, two, and seven of the Law on Higher Education Institutions (if applicable)

Assessment of compliance: Not relevant

14 14 - Compliance with the requirements specified in other regulatory enactments that apply to the study programme being assessed (if applicable)

Assessment of compliance: Not relevant

Assessment of the requirement [8]

1 R8 - Compliance of the study programme with the requirements set forth in the Law on Higher Education Institutions and other regulatory enactments.

Assessment of compliance: Partially compliant

The academic staff of the study programme don't comply with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions.
Only 1 professor is involved in implementation of A and B parts of the study programme.
Expert group evaluates the compliance of study programmes to the up-to-date version of regulations and unfortunately, the acknowledgment (on 01.07.2022; see attachment Nr_42_LiepU_Bak Datorzin_250_EN.docx) corresponds to the previous version of the law on Higher education, but does not comply to the current one.
As of now, study programme does not comply with requirements set forth by Law on Higher Education Institutions. However, criteria is evaluated as "partially compliant" as identified shortcomings can be addressed in short-term.

General conclusions about the study programme, indicating the most important strengths and weaknesses of the study programme

The study program is presented in two languages: Latvian and English.

The study programme don't comply with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions.

The study program can continue to be implemented in all declared implementation options, in all applied implementation languages and in all applied implementation places.

No major deficiencies which could not be eliminated during the 2-year accreditation period were identified.

The experts identify the most important weaknesses and strengths identified in the study programme:

Strengths:

1. The study program is well-balanced between the necessary basic knowledge, skills and competencies required to perform the duties of a programming engineer and the latest scientific trends in the field.

2. The content of the program is relevant to the field of the relevant industry.

3. Great support from employers' representatives

4. The qualification of the teaching staff members involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments.

5. There is a conviction that the study process is successfully implemented in the study programme.

6. Competencies of the academic staff of the study programme are generally high and enable the achievement of the aims and learning outcomes of the study programme and the relevant study courses.

7. The study programme management, lecturers, and support staff work as a team.

8. The academic staff share information about the content of their courses, teaching, learning and assessment methods they use and about student progress.

9. In the pandemic situation, the University and academic staff quickly reorganized their work into a distance learning mode.

Weaknesses:

1. Despite the use of project-based learning approach, the lack of appropriate and innovative teaching methods in some cases is observed.

2. Innovative solutions (methodological and technological innovation) are implemented in the study process to a small extent despite the fact that e-learning is a field of study in the study field, no innovation in the use of learning methods or technology stood out (e.g. innovative learning design models, learning analytics, open digital badges, online whiteboards).

3. The courses in the Moodle are not well structured and contain outdated information.

4. The available possibilities of the Moodle are not fully used.

5. The teaching workload of academic staff is an obstacle for methodological and technological innovation.

6. The course level is uneven in the study programme and several courses need to be modernized.

7. The study programme does not have the minimum number of students to ensure the profitability of the study programme;

8. High drop-out rate / low graduation rate.

9. Only 1 professor is involved in implementation of A and B parts of the study programme.

Evaluation of the study programme "Computer Science"

Evaluation of the study programme:

Average

2.6. Recommendations for the Study Programme "Computer Science"

Short-term recommendations

1. The University should develop a strategy and action plan to increase the use of innovative solutions (methodological and technological innovation) in the study process.

2. Academic staff must be given training on the implementation of pedagogical and technological innovation in the learning process.

3. Training on using available possibilities of Moodle and learning design must be organized for academic staff.

4. The teaching workload of academic staff should be reassessed so that it does not stand as an obstacle for methodological and technological innovation.

5. The Study Programme leader must ensure that all courses are updated and contain contemporary content.

Long-term recommendations

1. Promote mutual cooperation between teaching staff to exchange good practices regarding innovative methodological and technical teaching solutions

2. Develop a strategy and action plan to increase the use of innovative solutions (methodological and technological innovation) in the study process.

3. Academic staff must be given training on the implementation of pedagogical and technological innovation in the learning process.

4. Training on using available possibilities of Moodle and learning design must be organized for academic staff.

5. The teaching workload of academic staff should be reassessed so that it does not stand as an obstacle for methodological and technological innovation.

6. The Study Programme leader must ensure that all courses are updated and contain contemporary content.

7. The experts lack information on the problem of the high drop-out rate: is this a local phenomena of LiepU and the specific study field/ program, or is this a stable pattern across different HEIs in Latvia? If this is a local phenomena, LiepU should re-evaluate how to make 1) the student support program, 2) the marketing program, and 3) practice and job placement with social partners program interact to give maximum support for the enrolled students.

8. To attract new and retain enrolled students, develop and implement programs to promote and exploit the great technical and informational bases offered by LiepU: explore the novel forms of teaching using available online resources; popularize the results of the teaching and students' applied projects; promote the benefits of the program and job opportunities.

II - "Information Technology" ASSESSMENT

II - "Information Technology" ASSESSMENT

2.1. Indicators Describing the Study Programme

Analysis

2.1.1, 2.1.2.

The study programme "Information Technology '' is a professional master study programme with the goal to prepare competitive specialists with qualification "Lead software engineer" , "information technology project manager" or no professional qualification. Both qualifications corresponds to level 7 of the Latvian qualifications framework (LKI) and level 5 in professional qualification framework (PKL).

Degree to be obtained is a Professional Masters degree in Information Technology with qualification Lead Software Engineer or qualification Information Technology Project Manager. Classification code (IKK) is 47482. Following this code 482 corresponds to the "Computer Usage" subsection under the thematic field of "Computing" and 47 corresponds to professional master higher education.

Study language is in Latvian and in English. The length and study mode is full time 2 (80CP) years or 3 (120CP) years respectively. The study option without qualification is 2 years (at the same time on LiepU website indicates study length as 1 year 6 months). While study option with the opportunity to gain qualification is 2 or 3 years long depending on previous education. the 2 year option is reserved for those who hold a bachelor's degree in computer science or information technology or hold other degree while having completed courses in the 60CP amount in the field of IT. the 3 year option requirement is bachelor degree in mathematics or physics or other degree while having completed courses in 20 CP amount in IT. B2 level English is universal requirement.

The goal of the masters study program is "to educate high qualification specialists for professional activity in the field of information and communication technology with specialization in software engineering or management of information technology projects."

The study program both by its title, degree, qualification and curriculum is consistent with the study field "Information technologies, computer engineering, electronics, telecommunications, computer management and computer science". The title, code, degree and obtainable qualification are interrelated and coherent and fall within the scope of the general aims of the study programme.

2.1.3.

As indicated by University in SER 3.1.1. the programme underwent significant changes regarding study duration. Also the study programme is now structured on a modular basis. This approach will allow flexibility in offering optional modules and efficient planning of programme delivery costs by organising summer and winter admission streams. In addition to the existing Cloud Computing module, the programme also includes up-to-date modules on Artificial Intelligence, Smart Technologies and Sensor-Based Systems. The programme includes an ERASMUS module to enable students to make more effective use of ERASMUS mobility opportunities. Changes made to the study process and curriculum are justified and reasonable.

2.1.4.

As of now there are 24 students in total studying in study programme. 10 students study in Latvian language group while 14 - in English. Overall dynamics are relatively stable. This year 17 students were matriculated in 1st study year, 2021 - 12 new students, 2020 - 11. As indicated by LiepU in SAR 3.1.3 Most graduates work in IT companies as IT specialists, e.g. software development quality assurance engineer, technical consultant, web developer, information systems tester, systems analyst, IT project manager, etc. Graduates have jobs in Liepāja, for example, Emergn Latvija, Tieto

Latvia, Giraffe360, TestDevLab, also in companies founded by LiepU IT graduates "IT Līderis", PROGOteam, HighFive.lv, etc., and elsewhere in Latvia and abroad, for example, Accenture, MikroTik, "Like A Coffee", etc. Some IT Master's graduates are also LiepU faculty members (Mārtiņš Sinka, Aija Lagzdiņa, Māris Gulbis). LiepU conducts surveys for this programme's graduates. As noted by LiepU, surveys indicate that the knowledge and competences acquired during their studies are generally relevant to their professional responsibilities.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The title, code, degree and obtainable qualification are interrelated and coherent and fall within the scope of the general aims of the study programme and study field. There were corrections made to the study programme's duration within the reporting period.

Strengths:
1.Study programme fulfills a valuable economic role in providing industry with software development specialists.

Weaknesses
- No critical weaknesses have been identified.

2.2. The Content of Studies and Implementation Thereof

Analysis

2.2.1. The duration of studies (2 or 3 years) depends on the student's previous education. The 3-year study duration is intended for students with a degree obtained in another field (not IT or computer science) and who have completed courses in the field of computer science and information technology in the amount of at least 20 credit points. In the first year of study, these students learn the basics of software engineering (40 credits). This module provides students with basic knowledge in the field of information technology that they lack.

Then follow those modules that are common to those studying for 2 years. The 2-year study programme is for students with a Bachelor's degree in Information Technology or Computer Science, or if they have taken at least 60 credit points of courses in Computer Science and Information Technology as part of their programme of study and/or as a listener. In addition to the compulsory modules, students have the option of choosing between two compulsory qualification modules. This choice determines which of the two qualifications the student is awarded upon graduation - "Leading Programming Engineer" or "Information Technology Project Manager".

The study plan and the content of the courses are thoughtful, interconnected and complementary, as well as relevant to the industry and the qualifications that students are awarded. Even though, for example, the courses "IT project work management" (Appendix 10 p.45 in the Latvian version and p.50 in the English version) and "IT project management" (Appendix 10 p.7 in the Latvian version and p.11 in the English) provides quite a lot of knowledge, skills and competences of an IT project manager, but the content implemented in these courses is sufficient for the necessary results of the program. The optional modules of the study program provide a versatile insight into the latest scientific trends. It is possible to choose modules with courses such as "Big Data", "Introduction to deep machine learning", "Computer vision", "Robot control", and "Internet of Things". The content of the study program is consistent with the goal of the program to prepare highly qualified specialists for professional activity in the information technology and telecommunications industry with a specialization in software engineering or information technology project management.

The provided table in Appendix 6 indicates the compliance of the study program with the requirements of Cabinet Regulations No. 512 "Regulations on the National Standard for the Second Level Professional Higher Education". Appendix 7 shows the compliance of the study program with the new standards of the Information Technology Project Manager and Lead Programming Engineer professions, which was prepared by the Latvian Information and Communication Technology Association (LIKTA) and handed over to the working group of the Ministry of Education and Science and at the time of the submission of the HEI report, as well as the preparation of the expert opinion is under its evaluation.

2.2.2. Graduates of the Professional Master's programme are awarded a Professional Master's degree in Information Technology with or without the qualification Lead software engineer or information technology project manager. The relevant branch of science is Engineering and Technology, sub-branch Electrical Engineering, Electronics, Information and Communication Technologies. The content of the study programme includes current technology trends such as Artificial Intelligence and Machine Learning, Internet of Things, Big Data, Smart Technologies, Cloud Computing, etc. (SAR, p.94).

According to Clause 58 of the Law on Higher Education, the study program for obtaining a master's degree must end with a final examination, which includes the development and defense of a master's thesis. Study programs for obtaining a master's degree and professional qualification end with a state examination, which may include the development and defense of a diploma thesis (diploma project) and a master's thesis. Examinations are complex, mainly in written form. Universities are obliged to store these materials. The university must store the originals of defended qualification and master's theses for no less than 10 years, and their electronic versions permanently.
Mastering the study program under consideration ends with the development and defense of a master's thesis (Annexes, The curriculum of the study programme, The curriculum of the study programme, Compliance with the study programme with the State Education Standard).

According to the SAR (p.33) Liepaja University 'Regulations on final examinations, national examinations and final national examinations' establishes a commission for master higher education study programmes, consisting of five persons (chair and four members, one of whom is the secretary). Moreover, the head of the commission and at least half of the members must be representatives of professional industry organizations or employers in the field. This composition of the final examination board ensures professional monitoring of the achieved results .

During the reporting period 61 master's students have graduated from this program. So, the commission recognized their achieved results as appropriate for awarding the degree. Above mentioned approve that the awarding of the degree is based on the achievements and findings of the relevant field of science.

2.2.3.The report mentions what generally accepted basic principles are followed when evaluating the learning of the program. In the report and the descriptions of the study courses, the standard teaching style is mostly observed - lecture and practical work or laboratory work. The proportional distribution of lectures and practical work (or laboratory work) is mostly fifty-fifty. As well as in some of the courses with more emphasis on the practical part and some on the lecture form. The main forms of knowledge assessment are tests, quizzes, seminars, discussions, coursework, etc.

The report states that to ensure a student-centred approach, the final assessment in the study program is mostly made up of a cumulative assessment, including the student's work throughout

the study. The program uses project-based training and several study works are implemented. But despite this, during the visit, the lack of innovative teaching methods is observed. In some cases, even students mention the need to renew outdated course content (for example, machine learning, and programming). In this case, it could also indicate the need for more innovative teaching methods. The English language student flow is mainly provided with the same teaching methods as the Latvian flow, but in some cases, deficiencies in English language teaching materials are observed.

Overall the implementation methods mostly ensure the achievement of defined learning outcomes, although learning outcomes could be improved since they are identical to the professional bachelor study programme "Information Technology".

It must be noted that the defined study results are almost identical with the bachelor study programme "Information Technology". Professional master study programme "Information Technology" study results don't comply with the requirements of the Regulation of Ministers Cabinet No. 322 "Regulations on Latvian education classification".

2.2.4. During the previous accreditation period, the faculty concluded cooperation agreements with the following IT industry companies: Emergn Latvia (Exigen Services Latvia), Accenture Latvia, TestDevLab, Microsoft Latvia, MikroTīkls, Tilde, Lursoft IT, Tieto Latvia, "Like A Coffe", ProgoTEAM, S-Tec Latvia, IT Līderis, Enters, "Fantasyposh Latvia", "Highfive", "Passive Management", "Giraffe360", DEVS.LV, Tet, UPB, AE Partner, InPass, as well as with Kurzeme Business Incubator, Latvian Chamber of Commerce and Industry, Latvian Information and Communication Technology Association (LIKTA), Microsoft IT Academy Program, Liepaja City Council, etc.

The report mentions that foreign students have fewer options for internships. However, many companies in the IT sector operate in international software projects in which the working language is English, so they are also ready to accept foreign students in practice.

Students of both streams are also offered Erasmus+ opportunities and internships in a foreign company, which some of the students have also used during the reporting period, but this option is mostly used by students of the programme taught in English.

In general, it can be concluded that the internship opportunities and provisions offered to students are at a sufficient level to ensure internship opportunities for students of both flows. Also, during the visit, a large group of employers' representatives arrived, and they mentioned that they are happy to take students of the study program for internships. No significant deficiencies in the internship's work organization are observed or indicated. As well as internship tasks are following the achievable study results and both professional standards, as well as meet the requirements of regulatory acts. The results achieved during internships differ depending on the profession the student has chosen.

2.2.5. N/A

2.2.6. According to the SAR (p.94) the content of study programme covers the following areas: Data Processing Systems and Computer Networks, Computer Architecture and Hardware, Elements of Electronics, Telecommunication Networks, Computer Engineering and Networks, Electrical Engineering and Automation, Computer Control, Systems Analysis, Modelling and Design, E-Learning Technologies and Management.

The master students have chosen interdisciplinary topics relevant to the study field that correspond

to the study programme (its content), for example:
- Autonomous Navigation of Tracked Mobile Robot (areas Navigation - Safety technology, Robotics)
- Microservice Testing Practices in Software project (areas Cloud computing, Software architecture, Information technology)
- Home server and interface management creation (areas Web servers, Computer networks, Information technology)
- Internet platform for achieving digital marketing and e-commerce goals for sports organizations (areas Electronic records, Electronic commerce, Information technology)
- Software defined radio solutions in AIS data acquisition (Software, Wireless sensor networks, Radio, Information technology)
- Protection of information in computer networks from steganographic leakage (areas Data encryption, Computer science, Computer networks).

Conclusions on this set of criteria, by specifying strengths and weaknesses

The study plan and the content of the courses are thoughtful, interconnected and complementary, as well as relevant to the industry and the qualifications that students are awarded. However, it must be noted that the defined study results of study programme are almost identical with the bachelor study programme "Information Technology".
The English language student flow is mainly provided with the same teaching methods as the Latvian flow, but in some cases, deficiencies in English language teaching materials are observed.
Mastering the study program under consideration ends with the development and defense of a master's thesis.
The awarding of the degree is based on the achievements and findings of the relevant field of science.
The master students have chosen interdisciplinary topics relevant to the study field that correspond to the study programme.

Strengths:
1. The fact that it is possible to admit non-IT study program bachelor's students as well
2. Possibilities to choose one of the two professions - "Leading Programming Engineer" or "Information Technology Project Manager".
3. The study program provides a versatile insight into the latest scientific trends.
4. Employers' representatives highly value the program and willingly accept students of the program for internships and jobs.

Weaknesses:
1. Apart from project-based learning approach, innovative methodological and technical teaching solutions are rarely used in the study process. The standard teaching style is mostly observed - lecture and practical work or seminars.
2. The defined study results are almost identical to the professional bachelor study programme "Information Technology" and don't correspond requirements of the Regulation of Ministers Cabinet No. 322 "Regulations on Latvian education classification".

Assessment of the requirement [5] (applicable only to master's or doctoral study programmes)

1 R5 - The study programme for obtaining a master's or doctoral degree is based on the achievements and findings of the respective field of science or field of artistic creation.

   Assessment of compliance: Partially compliant

The study programme is based on the achievements and findings of the respective field of science.

The study results of study programme should be revised taking into account the Regulation of Ministers Cabinet No. 322 "Regulations on Latvian education classification" requirements.

2.3. Resources and Provision of the Study Programme

Analysis

2.3.1.
According to SAR (p.37), the study program is financed in accordance with the cost of the study programme set by the Cabinet of Minister. (Cabinet of Ministers' Regulation No 994 of 12.12.2006. "Procedures for financing higher education institutions and colleges from state budget funds").

According to SAR (p.40), funding for scientific research comes from several sources: Basic funding for scientific activities granted by the Ministry of Education of the Republic of Latvia (according to the Cabinet of Ministers Regulation No 1316 "Procedure for calculating and granting basic funding to scientific institutions".

According to SAR (p.40), for maintenance of elected scientific staff, scientific infrastructure, as well as partial provision of research work for academic staff, different funding sources are available: Performance funding, funds raised in a competitive procedure (internal grants, project co-financing, projects), as well as the Scientific Activity Development Fund of the Liepaja University.

According to SAR (p.40), there are funds available to support scientific activities of the academic staff: the funding is allocated from the development budget of the LiepU Faculty of Natural Sciences and Engineering and the LiepU Scientific Activities Development Fund.

During the meeting with the academic personnel, the Experts Committee (EC) received indications that not 100% of applications for funding research activities is approved. Approval of applications is a competitive process, the outcomes of which determine such factors as availability of funds and qualitative evaluation of the goals and outcomes of the application against the goals of the academic unit (faculty/institute).

During the meeting with the academic personnel, the Experts received indications that the academic staff may lack information on availability of budget for the provision of work support equipment (laptops).

2.3.2. N/A

2.3.3.
According to SAR (p.37), the study program is financed in accordance with the cost of the study programme set by the Cabinet of Minister. (Cabinet of Ministers' Regulation No 994 of 12.12.2006. "Procedures for financing higher education institutions and colleges from state budget funds").

According to SAR (p.41), the Director of Finance and Personnel ensures that the persons preparing the budget shall act in accordance with the instruction "Planning, Execution and Control of the Liepaja University Core Budget" during the budget planning and execution process. Budget planning is carried out in accordance with the QMS procedure A-2-1 "Core Budget Planning", and execution and control in accordance with procedure A-2-2 "Execution and Control of the Core Budget."
According to SAR (p.40), allocation of cost within the program is done according to the actual needs

of the program and in consideration of the development strategy of LiepU.

According to SAR (p.37), the financial resources available to the study program consist of the state budget subsidy (the majority of the budget income) and own income (tuition fees).

According to SAR (p.37), the amount of tuition fee and the payment procedure for each academic year shall be determined and approved by the LiepU Council.

According to SAR (p.37), the provision of financial resources is stable. The base cost per state-funded study place is set at EUR 1,630.11 in 2022. The tuition fee for the full-time academic Bachelor's study programme "Computer Science" in English was increased from EUR 2,200 to EUR 2,500.

The calculation of the projected costs of the professional master study programme "Information technology" for full-time study for the period 2021-2022 is based on the base costs for 2021 (EUR 1,630.11 per one study place) and the coefficient of the thematic area of education "Computer science" established by the Ministry of Education and Science: 1.5, as well as the cost coefficient for professional bachelor-level study programmes: 1.5 The cost per study place in 2022 is EUR 3 667,75.
The approved tuition fee for full-time study for the first year of the academic year 2022/2023 is EUR 2,400 (in English - EUR 2,800)

SAR reported (p.100) minimum number of students per course is 9.
Number of students in the program currently is 24 and the number was relatively stable in the range of 22 to 27 for the last 4 years (since 2018).

The total number of students is the sum of the number of students in 2 different implementations of the program (2 and 3 year) and 2 language streams (English and Latvian), where in each separate implementation/language, the number of students in different courses (years of study) varied between 0 and 8 during the last 4 years (2018-2021), thus never reaching the threshold of financial profitability. The drop out rates were in the range of 3 to 5 in the first 4 years of the reporting period (2013-1016), but increased to 7-10 in the last four years of the reporting period (2018-20121). During the same period, group-out rates started to exceed the number of graduates. During the same period (2018-2021), the rate of drop-outs to the total number of students varies between 13% and 42%.

Conclusions on this set of criteria, by specifying strengths and weaknesses

Conclusions
Given the procedures reported in SAR, and not having identified facts proving otherwise during the Experts' visit to HEI, it can be concluded that the study provision, scientific provision, informative provision (including library), material and technical provision and financial provision comply with specific features and the conditions for the implementation of the study programme, create prerequisites for the achievement of the learning outcomes and indicate the possibility to ensure a high-quality study process
At the same time, during the meeting with academic staff it was brought to the Experts's knowledge, that not 100% of applications for funding research activities are approved, and that the teaching staff is not aware of the possibility to obtain a personal laptop for the delivery of work-related tasks.

Given the procedures reported in SAR, and not having identified facts proving otherwise during the Experts' visit to HEI, it can be concluded that the funding available to the study programme, funding sources and the use of funding ensures full implementation of the study process.

The study programme does not have the minimum number of students to ensure the profitability of the study programme. The SAR reported (p.100) minimum number of students per course is 9, while the number of students in different courses (years of study) varied between 0 and 8 during the last 4 years (2018-2021).

Strengths:
1. good material and technical base;
2. great opportunities to use Internet, library electronic data bases.

Weaknesses:
1. The study programme does not have the minimum number of students to ensure the profitability of the study programme;
2. Drop-out rates exceed the graduation rates.

Assessment of the requirement [6]

1 R6 - Compliance of the study provision, science provision (if applicable), informative provision (including library), material and technical provision and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of learning outcomes

   Assessment of compliance: Fully compliant

   Apart from the low number of students and the high drop-out rate, the study provision, science provision, informative provision (including library), material and technical provision comply with the conditions for the implementation of the study programme and ensuring the achievement of learning outcomes.

2.4. Teaching Staff

Analysis

2.4.1.
SAR (p. 101) indicates that all academic staff including visiting teaching staff involved in the study programme comply with the conditions for the implementation of the study programme and the requirements of the regulatory enactments (e.g. the Law on Higher Education Institutions, "Regulations on elections to academic positions", "Criteria for the evaluation of professional qualifications of academic staff for courses" (available at kvs.liepu.lv). The qualification level of the academic staff involved in the implementation of the study programme by study year is presented in Table 3.4.1.1 (SAR, pp. 101-102). All teaching staff have a Master's or a Doctoral degree. According to Table 3.4.1.1., the number of teaching staff with a doctorate degree has increased slightly in the last four years, while the number of teaching staff with a master's degree has decreased. In the last three years, the proportion of teaching staff with a master's degree has been stable at 68%, and the proportion of teaching staff with a doctorate degree at 32%. Most of the teaching staff have a Master's or Doctoral degree in computer science or information technology. Some associate professors have degrees in pedagogy or educational sciences, specializing in teaching methods in informatics, mathematics or physics. Associate professors of general education courses have a master's or doctoral degree in social sciences. The qualifications of the teaching staff ensure the competence necessary to prepare and conduct classes and to organize independent study work to support students' professional development. Visiting lecturers from abroad add an international

dimension to the study programme. IT professionals invited from companies supplement the study programme with their practical work experience (SAR, p. 102).

A total of 22-27 teaching staff members are planned for the next accreditation period. The number of teaching staff involved in a given academic year will depend on the duration of the study programme (2 or 3 years) and the qualifications and modules chosen. At the moment four professors, eight assistant professors, 15 lecturers are teaching the study programme. 12 lecturers are with a doctorate and 15 with a master's degree. There are 12 elected and 15 not elected faculty members (SAR, p. 102). The involved IT professionals work in IT companies, for example, in TestDevLab, Like a Coffee, SIA "MeaWallet Latvia", and asya.ai (SAR, p. 102).

At the time of submission of the self-assessment report, the professional master's study programme "Information Technology" involved 23 teaching staff members for 22 students (SAR, p. 103).

Both the SAR and the interviews with students, graduates, employers and lecturers make it possible to state that the study programme involves competent lecturers who are interested in promoting the acquisition of students' knowledge, skills and professional competence and they have the required qualifications.

2.4.2.
It is noted in SAR that in order to ensure high-quality and innovative implementation of the study programme, several criteria are used for the selection of the academic staff to be involved in the study programme, making sure that the courses are taught by qualified, scientifically, and methodologically prepared instructors, specialists in the field of study, who use modern approaches in their work (p. 48).

According to the Law on Higher Education Institutions, and the Liepaja University "Regulations on elections to academic positions", residents of the Republic of Latvia and foreign citizens can be elected to academic positions, and their election to academic positions is governed by these regulatory documents (SAR, p. 48). The requirements for the selection and participation of foreign teaching staff in the teaching of study programmes are specified in the Liepaja University Academic Staff Development Plan for 2018–2022 (SAR, p. 48).

The selection of teaching staff for the implementation of study programmes is based on the "Criteria for the evaluation of professional qualifications of academic staff for courses". The mandatory criteria for selecting the teaching staff are: 1) the qualifications of the teaching staff meet the requirements set by applicable laws and regulations; 2) research area/interest is relevant to the study programme/course; 3) appropriate knowledge of the official language and of foreign languages (SAR, p. 48).
The assessment criteria of teaching staff are described in detail in SAR (p. 48) and include doctoral or master degree appropriate to the course taught or one in a related field, and publications in a sub-discipline or field of artistic creativity. The requirements set for the candidates for a teaching position are set in accordance with the Liepaja University "Regulations on elections to academic positions".

Changes in the composition of the teaching staff are mainly due to generational changes and the involvement of associate professors with doctoral degrees or doctoral theses defenses planned in the near future. In 2022 and 2023, several lecturers are expected to defend their doctoral degrees in engineering, social sciences, and economics. Two faculty members started their doctoral studies (SAR, 102).

In the specialization areas of artificial intelligence and smart technologies, the study programme involves the Institute of Natural Sciences and Innovative Technologies (DITI) senior researchers and researchers, ensuring the implementation of research-based studies. New teaching staff have been recruited for the implementation of new modules "Artificial Intelligence", "Smart Technologies" and "Sensor-based Systems", which correspond to current trends in IT (SAR, pp. 101-103).

Based on analyzed documentation and interviews with both students, lecturers and representatives of the management, it was evident that the necessary procedures for recruitment and evaluation of staff have been established, the dialogue on the expected learning outcomes in study courses has been maintained. It was evident that the University and the Faculty have developed procedures for staff engagement and employment processes.

2.4.3. N/A

2.4.4.
Each member of the academic staff in the last six years has published in peer-reviewed editions, including international editions (if the staff member has worked for a shorter period, the number of publications should be indicated in proportion to the period worked) or artistic achievements (for example, exhibitions, films, theater performances and concerts) or five years of practical experience (except for experience in the implementation of the study programme) in accord

Each member of the academic staff in the last six years has published in peer-reviewed editions, including international editions.

2.4.5.
The teaching staff employed in the study programme cooperate in the development and implementation of joint research and projects, as well as in the development ofthe content of joint professional specialization and theoretical courses in the field of study and inthe exchange of information on current developments in the field and in the study process. They exchange information on current developments in the field through meetings at various industry exhibitions, international conferences, seminars and other networking events. Information exchange is ensured by regular meetings of the teaching staff at meetings organized by the Faculty and meetings within the framework of research activities at scientific institutes (SAR, p. 103).

The Faculty has historically developed a good culture of internal collaboration. However, no formal mechanism has been developed for the promotion of mutual cooperation between academic staff. Interviews with academic staff confirmed that there are regular meetings to exchange information and that academic staff share information about the content of their courses and the teaching methods they use.

Conclusions on this set of criteria, by indicating strengths and weaknesses

Conclusion
The qualification of the teaching staff members involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments. The study programme employs enthusiastic and competent academic staff for the implementation of the study field. There is a conviction that the study process is successfully implemented in the institution. The views expressed at the meeting with students and graduates, in turn, show that not all courses are taught at a high level and need to be modernized to include the latest scientific results and trends. In addition, it stood out that the

academic staff do not use all the possibilities of the learning management system Moodle and the possibilities of modern technology (e.g. learning analytics, badges, online whiteboards, etc.). The courses in the Moodle need better structuring and elimination of outdated information. The teaching workload of academic staff is an obstacle for methodological and technological innovation.

Strengths:
1. The qualification of the teaching staff members involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments.
2. There is a conviction that the study process is successfully implemented in the institution.
3. Competencies of the academic staff of the study programme are generally high and enable the achievement of the aims and learning outcomes of the study programme and the relevant study courses.
4. The study programme management, lecturers, and support staff work as a team.
5. In the pandemic situation, the University and academic staff quickly reorganized their work into a distance learning mode.

Weaknesses:
1. Innovative solutions (methodological and technological innovation) are implemented in the study process to a small extent despite the fact that e-learning is a field of study in the study field, no innovation in the use of learning methods or technology stood out (e.g. innovative learning design models, learning analytics, open digital badges, online whiteboards).
2. The courses in the Moodle are not structured and contain outdated information.
3. The available possibilities of the Moodle are not fully used.
4. The teaching workload of academic staff is an obstacle for methodological and technological innovation.
5. The course level is uneven in the study programme and several courses need to be modernized.

Assessment of the requirement [7]

1 R7 - Compliance of the qualification of the academic staff and visiting professors, visiting associate professors, visiting docents, visiting lecturers and visiting assistants with the conditions for the implementation of the study programme and the requirements set out in the respective regulatory enactments.

   Assessment of compliance: Fully compliant

   The qualification of academic staff involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments

2.5. Assessment of the Compliance

Requirements

1 1 - The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard

   Assessment of compliance: Fully compliant

   Annex P6 ("6_AtbilstibaValstsAIstandartam_Bit_ENG.pdf") confirms that the study program complies with Cabinet Regulation No. 512 "Noteikumi par otrā līmeņa profesionālās augstākās izglītības valsts standartu"

2   2 - The study programme complies with a valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided if the completion of the study programme leads to a professional qualification (if applicable)

   Assessment of compliance: Fully compliant

   Annex P7 ("P7_AtbilstibaProfesijasStandartam_EN.pdf") confirms that the programme is compliant with Information Technology Project Manager professional standard and Lead Software Engineer professional standard.

3   3 - The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 561 , Paragraph two and Section 562 , Paragraph two of the Law on Higher Education Institutions.

   Assessment of compliance: Fully compliant

   Attached study course descriptions
   (Annex P10 "P10_kursa apraksti_IT_bakalauri_EN.pdf") are prepared in latvian and english. Descriptions complies with regulations set forth in Law on Higher Education Institutions.

4   4 - The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure according to which state recognised documents of higher education are issued.

   Assessment of compliance: Fully compliant

   The provided Diploma sample complies with the procedure by which state-recognised documents of higher education are issued according to MK No. 202 "Kārtība, kādā izsniedz valsts atzītus augstāko izglītību apliecinošus dokumentus".

5   5 - The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions.

   Assessment of compliance: Not relevant

6   6 - Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Higher Education Institutions.

   Assessment of compliance: Not relevant

7   7 - At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts (if applicable).

   Assessment of compliance: Not relevant

8   8 - The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

   Assessment of compliance: Fully compliant

Attached resumes of staff and LiepU confirmation letter Nr. 7.D7.10./57 verifies that state language proficiency is compliant with MK. Nr. 733 "Noteikumi par valsts valodas zināšanu apjomu, valsts valodas prasmes pārbaudes kārtību un valsts nodevu par valsts valodas prasmes pārbaudi".

9 9 - The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language (if applicable).

   Assessment of compliance: Fully compliant

   Attached resumes of staff and LiepU confirmation letter Nr. 7.D7.10./55 verifies that language proficiency in English is at least B2.

10 10 - The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

   Assessment of compliance: Fully compliant

   Sample of attached study agreement complies with MK. Nr. 70 "Studiju līgumā obligāti ietveramie noteikumi".

11 11 - The higher education institution / college has provided confirmation that students will be provided with opportunities to continue their education in another study programme or another higher education institution or college (agreement with another accredited higher education institution or college) if the implementation of the study programme is terminated.

   Assessment of compliance: Fully compliant

   Attached contract Nr. 1.-2022/207 with Latvia University of Life Sciences and Technologies confirms that institution provides possibility to continue studies within academic masters programme "Information Technologies". Including students of english language programme.

12 12 - The higher education institution / college has provided confirmation that students are guaranteed compensation for losses if the study programme is not accredited or the study programme's license is revoked due to the actions (actions or omissions) of the higher education institution or college and the student does not wish to continue studies in another study programme.

   Assessment of compliance: Fully compliant

   LiepU confirmation letter Nr. 1.-1.6./245 states, that students are guaranteed compensation for losses if the study programme is not accredited or the licence of the study programme is revoked due to the actions of the college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

13 13 - The joint study programmes comply with the requirements prescribed in Section 55.(1), Paragraphs one, two, and seven of the Law on Higher Education Institutions (if applicable)

   Assessment of compliance: Not relevant

14 14 - Compliance with the requirements specified in other regulatory enactments that apply to the study programme being assessed (if applicable)

   Assessment of compliance: Not relevant

Assessment of the requirement [8]

1 R8 - Compliance of the study programme with the requirements set forth in the Law on Higher Education Institutions and other regulatory enactments.

Assessment of compliance: Partially compliant

Study results of master study programme does not meet the requirements of the Regulation of Ministers Cabinet No. 322 "Regulations on Latvian education classification".

General conclusions about the study programme, indicating the most important strengths and weaknesses of the study programme

Study programme is delivered in two languages: latvian and english.

The study program both by its title, degree, qualification and curriculum is consistent with the study field "Information technologies, computer engineering, electronics, telecommunications, computer management and computer science".

The title, code, degree and obtainable qualification are interrelated and coherent and fall within the scope of the general aims of the study programme.

The study programme may not have the minimum number of students to ensure the profitability of the study programme.

The course level is uneven in the study programme and several courses need to be modernized"

No major deficiencies which could not be eliminated during the 2-year accreditation period were identified.

The study program can continue to be implemented in all declared implementation options, in all applied implementation languages and in all applied implementation places.

The experts identify the most important weaknesses and strengths identified in the study programme:

Strengths:

1. The fact that it is possible to admit non-IT study program bachelor's students as well

2. Possibilities to choose one of the two professions - "Leading Programming Engineer" or "Information Technology Project Manager".

3. The study program provides a versatile insight into the latest scientific trends.

4. Great support from employers' representatives

5. The qualification of the teaching staff members involved in the implementation of the study programme complies with the requirements for the implementation of the study programme and the requirements set forth in the regulatory enactments.

6. There is a conviction that the study process is successfully implemented in the institution.

7. Competencies of the academic staff of the study programme are generally high and enable the achievement of the aims and learning outcomes of the study programme and the relevant study courses.

8. The study programme management, lecturers, and support staff work as a team.

9. In the pandemic situation, the University and academic staff quickly reorganized their work into a distance learning mode.

10. good material and technical base;

11. great opportunities to use Internet, library electronic data bases.

Weaknesses:

1. Innovative solutions (methodological and technological innovation) are implemented in the study process to a small extent despite the fact that e-learning is a field of study in the study field, no innovation in the use of learning methods or technology stood out (e.g. innovative learning design models, learning analytics, open digital badges, online whiteboards).

2. The courses in the Moodle are not well structured and contain outdated information.

3. The available possibilities of the Moodle are not fully used.

4. The teaching workload of academic staff is an obstacle for methodological and technological innovation.

5. The course level is uneven in the study programme and several courses need to be modernized.

6. The study programme may not have the minimum number of students to ensure the profitability of the study programme.

7. Study results of master study programme does not meet the requirements of the Regulation of Ministers Cabinet No. 322 "Regulations on Latvian education classification".

Evaluation of the study programme "Information Technology"

Evaluation of the study programme:

Good

2.6. Recommendations for the Study Programme "Information Technology"

Short-term recommendations

1. The Study Programme leader must ensure that all courses are updated and contain contemporary content.
2. Revise the study program's achievable study results so that they correspond to the appropriate level of the European Qualification Framework (EQF/EKI).

Long-term recommendations

1. The University should develop a strategy and action plan to increase the use of innovative solutions (methodological and technological innovation) in the study process.
2. Academic staff must be given training on the implementation of pedagogical and technological innovation in the learning process.
3. Training on using available possibilities of Moodle and learning design must be organized for academic staff.
4. The teaching workload of academic staff should be reassessed so that it does not stand as an obstacle for methodological and technological innovation.
5. Promote mutual cooperation between teaching staff to exchange good practices regarding innovative methodological and technical teaching solutions

II - "E-studies Technologies and Management" ASSESSMENT

II - "E-studies Technologies and Management" ASSESSMENT

2.1. Indicators Describing the Study Programme

Analysis

2.1.1, 2.1.2.
The study programme "E-studies Technologies and Management'' is a doctoral study programme with the goal to equip young doctors with the skills to work internationally, to conduct research in the field of knowledge society technologies and to bring new knowledge into education. Degree to

be obtained is a Doctor of Science (Ph.D.) in Electrical Engineering, Electronics, Information and Communication Technologies; or Educational Sciences. According to SAR, in order to obtain a degree in Educational Science, candidate must defend at LiepU Doctoral Council, for other study field - in RTU Doctoral Council.

Classification code (IKK) is 51482. Following this code 482 corresponds to the "Computer usage" subsection under the thematic field of "Computing" and 51 corresponds to doctoral studies.. The length and study mode is full time 4 years.

Study language is in Latvian and English. Admission requirements are Master's degree in natural sciences, Master's degree in engineering, Master's degree in social sciences, Master's degree in arts and humanities, or higher education diplomas equivalent to these Master's degrees. In addition, potential candidates must submit a paper (10 to 15 pages) on the chosen research topic and participate in an interview to discuss the relevance and social significance of the chosen research problem.

According to SAR the results of the doctoral study program are:
1. Will be able to create competitive products in knowledge management, mobile and collaboration technologies, e-products and services.
2. Will be able to conduct academic and industrial interdisciplinary research and prepare it for publication in scientific journals.
3. Will be able to understand the needs of the knowledge society in the field of e-learning technologies to choose methods to meet these needs.
4. Will be able to initiate and prepare national and international eStudy research and development projects and manage such projects or parts thereof.
5. Able to follow the research and development of e-learning technologies in the world, evaluate the latest solutions and predict their impact.
6. Able to implement innovative e-learning courses and evaluate the results using the latest e-learning technology findings.
7. Able to create, develop and implement new ideas in the field of e-learning technologies

The study program both by its title, degree, qualification and curriculum is consistent with the study field "Information technologies, computer engineering, electronics, telecommunications, computer management and computer science". The title, code, degree and obtainable qualification are interrelated and coherent and fall within the scope of the general aims of the study programme.

2.1.3.
As indicated by the University there have been no changes to the parameters of the study programme during the previous reporting period. Yet there has been changes regarding study plan and curriculum. For some courses ECTS amount has been changed, some courses has been moved from A part to B part. And some of the courses has been removed or replaced by new ones. In general changes are justified and made in order to keep study programme relevant and up-to date.

2.1.4.
At this moment there are a total of 10 students studying doctoral study programme. The average number of students enrolled during the reporting period is 2-3 per year. 2 LiepU doctoral students have defended their doctoral theses so far (they received EU Structural Funds doctoral students' grant funding) as indicated by LiepU. Study programme is quite unique given recent trends in e-learning approbation by various institutions of learning,

Conclusions on this set of criteria, by specifying strengths and weaknesses

The title, code, degree and obtainable qualification are interrelated and coherent and fall within the scope of the general aims of the study programme and study field. It is commendable that doctoral students have opportunities to choose obtainable degree.

Strengths:
1. Doctoral study programme is quite unique in its thematic direction
2. Possibility to choose obtainable degree

Weaknesses:
- No weaknesses been identified.

2.2. The Content of Studies and Implementation Thereof

Analysis

2.2.1.
Most of the course descriptions indicate that no prior knowledge is required for the course (general prerequisites are indicated in some cases), which suggests that the order in which the courses are taken is not essential. But in some sense, the topics of the courses are related, so the courses could be mutually complementary.

Part B of the study program has a larger proportion of optional study courses in educational sciences rather than in engineering sciences. Bachelor's and Master's study programs provided a more versatile insight into the latest scientific engineering trends. The study program and its content partly corresponds to the latest scientific trends in the field of Information Technology, but correspond very well to the latest scientific trends in the field of E-studies Technologies.

In SAR it is stated that goal of the study program is that it is designed to develop interdisciplinary research in technology/e-learning at an international level in the knowledge society, which is currently located in different fields of science according to the traditional classifications of the industrial society; it provides an opportunity to learn existing and develop new research methods in e-learning and related fields. The participation of doctoral students in various projects and project opportunities for further involvement of doctoral students can be observed (SAR p.59-61), and it is also confirmed in interviews with students and doctoral students.

In interviews with PhD students it is noted that they perceive high-quality publications very formally, and that this means that they must be in databases. But it should be noted that doctoral students are not informed about publications' quartile indicators, as well as the fact that there is not always a fee for publication. It would be advisable to provide students with information about the open access database, where there are opportunities to publish for free.

2.2.2.
According to the REGULATIONS FOR DOCTORAL STUDIES of LiepU publicly available at https://www.liepu.lv/lv/672/nolikumi , "The scientific degree of doctor is awarded by the promotion councils after successful defense of the doctoral thesis in accordance with the promotion procedures and criteria adopted in the Republic of Latvia" (p.4.).

In the Minister cabinet regulation N0.1001 clause 2. is stated that "the degree is awarded for a doctoral thesis independently developed and publicly defended under the guidance of an

experienced scientist (hereinafter referred to as the thesis supervisor), which contains the results of original scientific research and provides new insights in the relevant branch or sub-branch of sciences". In the regulations clause 5. is mentioned that "The Doctoral council operates in accordance with the regulations approved by the university. LiepU has established the Doctoral Council in the Educational sciences whose current composition (approved at the LiepU Senate meeting on 23.05.2022.) is published in the LiepU website at https://www.liepu.lv/lv/143/promocijas-padomes and has the REGULATIONS OF THE PROMOTION COUNCIL of the University of Liepāja (in latvian Liepājas Universitātes PROMOCIJAS PADOMJU DARBĪBAS NOLIKUMS, last updated with amendments of the LiepU Senate on 25.05.2020. meeting, protocol no. 12) published in the LiepU website at https://www.liepu.lv/lv/672/nolikumi. In SAR p.136. is mentioned that "the Council of the Doctoral Study Programme "E-Learning Technologies and Management" shall coordinate the requirements included in the Regulations, Rules and other normative documents of LiepU."

According to the Minister cabinet regulation Nr.1001 clause 5. the composition of the Doctoral Council in the branch or sub-branch of science is determined by the relevant higher education institution and the council includes at least five scientists who have the right of an expert of the Latvian Science Council in the field of science, two of them in the sub-field of science in which the doctoral thesis is defended. After reviewing the protocol of the Senate meeting held on 27.05.2019, the expert found that the Doctoral Council of the Pedagogical Sciences branch of the University of Liepāja was approved at the Senate meeting. All 8 members were granted expert rights in Social Sciences - Educational science (Protocol of Senate meeting, No. 11, 27.05.2019).

According to the SAR (p.131) during the reporting period, 6 doctoral students obtained their doctoral degrees. So, the Doctoral council has decided to recognizing doctoral students that publicly defended their doctoral thesis as meeting the defined criteria, i.e. for a work independently developed under the guidance of an experienced scientist, which contains the results of original scientific research and provides new insights.

According to the Opinion from Latvian Council of Science regarding the doctoral study programme "E-studies Technologies and Management" (in latvian, 14.11.2022. Nr. 1-3.N-1706 on 19.10.2022., Nr. 2022/4.2-159) the council acknowledges that the degrees awarded in them Doctor of Science degree (Ph.D.) in electrical engineering, electronics, information and communication technologies or Doctor of Science degree (Ph.D.) in educational sciences correspond to the content of doctoral study programs.

Experts conclude that the procedure for the development and defense of doctoral theses meets the Regulation of Ministers Cabinet No.1001 requirements and the awarding of a degree is based on the achievements and findings of the relevant field of science.

2.2.3.
The course descriptions observe both the standard fifty-fifty division of lectures and practicals, as well as a greater emphasis on the practical part. However, not all courses indicate the type of lectures or their division into theoretical lectures and practical ones. It is also stated in the report that both traditional information technology and educational research methods and Livig Lab methods are used in the research. But in general, it could be concluded that innovative teaching methods are observed to a very small extent.

Studies and research work are carried out according to a study plan individually developed for each doctoral student, which is approved at the start of studies and is regularly monitored during the

course of studies. In accordance with the RTU and LiepU Doctoral Studies Regulations, at the end of each academic year, a doctoral student is attested for the evaluation of his/her individual work. The opinion of the Faculty of Science and Engineering (LiepU) or RTU Faculty of E-Learning Technologies and Humanities (ETHZF) (RTU) on the doctoral student's thesis is recorded and submitted to the Vice-Rector of Science. All this is also confirmed by students and graduates during interviews.

Regular meetings of doctoral students with their supervisors, as well as other types of stimulating events for doctoral students, which are mentioned in interviews with students and graduates, positively influenced the cooperation and mutual motivation of doctoral students. This is evaluated by students and graduates as a very positive motivating factors for studying in the study program. In general, it can be concluded that the principles of student-centered teaching and learning are partly taken into account and the implementation methods mostly ensure the achievement of defined learning outcomes.

2.2.4. N/A

2.2.5. LiepU has established the REGULATIONS FOR DOCTORAL STUDIES which determines the course of Doctoral studies and the REGULATIONS OF THE PROMOTION COUNCIL of the University of Liepāja which determines:
- the procedure and criteria for the awarding (promotion) of a scientific doctoral degree, according to which a person's academic activity is equated with the requirements of an accredited doctoral study program,
- procedure for submitting a doctoral thesis,
- doctoral thesis evaluation procedure,
- procedures for the public defense of the doctoral thesis and the awarding of the degree.

According to SAR (p.137.) "for obtaining a Doctor of Science degree in electrical engineering, electronics, information and communication technologies, the candidate defends it at the RTU Doctoral Council, while the Doctor of Science degree in education science defends it at the LiepU Doctoral Council".

The procedure of the doctoral thesis submission and evaluation is explained in SAR (p.136). It includes several sequential steps:
- The applicant shall submit necessary documents no later than three months before the defense of the doctoral thesis to the Doctoral Council.
- The Doctoral Council sends the submitted thesis to the committee for evaluation.
- The committee evaluates the applicant's work and, if the evaluation is positive, appoints an independent international expert and notifies the Doctoral Council.
- The chairman of the Doctoral Council invites three reviewers, one of whom is an expert from the Council and two from other scientific institutions.
- The Doctoral Council shall determine the time of the meeting and announce it two weeks in advance in the newspaper Latvijas Vēstnesis and the newspaper Zinātnes Vēstnesis.

During the visit study program director and doctoral students persuaded that the study program director provide consultation and advice if the student has any questions. In separate cases doctoral students turn to the vice-rector of science after consultation. Experts noticed that the involvement of other structural units of the university whose activities are related to or affect doctoral studies is insufficient, for example, students acquire information about projects only from study program director not straight from the project department.

So, students can get clearly defined promotion (doctoral theses defense) opportunities, but the involvement of different structural units of LiepU and information exchange, as well as workload of the study program director could be improved.

2.2.6.
The doctoral students have chosen topics relevant to the study field that correspond to the study programme, for example:
- Creation of a reflective ePortfolio system for improving student competencies (areas, subjects: Electronic portfolio in education, Software -- Development, Students -- Professional evaluation -- Data processing)
- Technological support in the implementation of the cooperative learning pedagogical approach in combined studies (areas, subjects: Education, higher; Computer-based training, Distance learning)
- The design of the implementation of the flipped learning approach in the learning process in primary school (areas, subjects: Learning - Flipped learning, Individual training, Information technology)
- Study of educational activities in the e-study environment (areas, subjects: Education, Educational innovations, Internet in education).

Conclusions on this set of criteria, by specifying strengths and weaknesses

Students can get clearly defined promotion (doctoral theses defense) opportunities, but the involvement of different structural units of LiepU and information exchange, as well as workload of the study program director could be improved.

Regular meetings of doctoral students with their supervisors, as well as other types of stimulating events for doctoral students positively influence the cooperation and overall motivation of doctoral students. This is evaluated by students and graduates as a very positive motivating factors for studying in the study program.

Part B of the study program has a larger proportion of optional study courses in educational sciences rather than in engineering sciences. In the study field Bachelor's and Master's study programs provided a more versatile insight into the latest scientific engineering trends, for example, "Introduction to Artificial Intelligence", "Computer Vision", " Robot control", and "Internet of things".

The doctoral students have chosen topics relevant to the study field that correspond to the study programme.

The procedure for the development and defense of doctoral theses meets the Regulation of Ministers Cabinet No.1001 requirements and the awarding of a degree is based on the achievements and findings of the relevant field of science.

Strengths:
1. Cooperation with RTU
2. Regular meetings of doctoral students with their supervisors, as well as other types of stimulating events for doctoral students

Weaknesses:
1. Relatively smaller engineering study course module and fewer engineering study courses compared to educational sciences orientation study courses.

2. Innovative teaching methods are observed to a very small extent
3. Doctoral students are not informed about publications' quartile indicators, as well as opportunities to publish for free.

Assessment of the requirement [5] (applicable only to master's or doctoral study programmes)

1 R5 - The study programme for obtaining a master's or doctoral degree is based on the achievements and findings of the respective field of science or field of artistic creation.

   Assessment of compliance: Partially compliant

   Innovative teaching methods are observed to a very small extent

2.3. Resources and Provision of the Study Programme

Analysis

2.3.1. According to SAR (p.37), the study program is financed in accordance with the cost of the study programme set by the Cabinet of Minister. (Cabinet of Ministers' Regulation No 994 of 12.12.2006. "Procedures for financing higher education institutions and colleges from state budget funds").

According to SAR (p.40), funding for scientific research comes from several sources: Basic funding for scientific activities granted by the Ministry of Education of the Republic of Latvia (according to the Cabinet of Ministers Regulation No 1316 "Procedure for calculating and granting basic funding to scientific institutions".

According to SAR (p.40), for maintenance of elected scientific staff, scientific infrastructure, as well as partial provision of research work for academic staff, different funding sources are available: Performance funding, funds raised in a competitive procedure (internal grants, project co-financing, projects), as well as the Scientific Activity Development Fund of the Liepaja University.

According to SAR (p.40), there are funds available to support scientific activities of the academic staff: the funding is allocated from the development budget of the LiepU Faculty of Natural Sciences and Engineering and the LiepU Scientific Activities Development Fund.

During the meeting with the academic personnel, the Experts Committee (EC) received indications that not 100% of applications for funding research activities is approved. Approval of applications is a competitive process, the outcomes of which determine such factors as availability of funds and qualitative evaluation of the goals and outcomes of the application against the goals of the academic unit (faculty/institute).

During the meeting with the academic personnel, the Experts received indications that the academic staff may lack information on availability of budget for the provision of work support equipment (laptops).

2.3.2.
According to SAR (p.147), the study programme is implemented by the teaching staff of RTU, LiepU and VIA. To ensure that doctoral students have a broad enough range of research, the study programme includes a relatively large number of academic staff. The qualifications of the teaching staff meet the conditions for the implementation of the study programme and the requirements of

the regulatory enactments. Teaching staff hold a doctor's degree, the position of a professor, associate professor, docent, lecturer, senior researcher or researcher.

According to SAR (p.145), The study and research base is developed at international level. RTU and LiepU have access to almost all the latest technologies with potential for e-learning research and development within the framework of international projects. In cooperation with TRU, doctoral students are provided with study courses and teaching staff in the fields of engineering sciences.

On p.156, SAR reports on a new HorizonEurope project "TED4LAT Twinning in Environmental Data and Dynamical Systems Modelling for Latvia", in which the teaching staff members involved in the doctoral programme plan to participate. The share of funding of RTU is 1.2 million EUR, the share of funding of the Liepaja University is EUR 0.4 million. EUR.

2.3.3.
According to SAR (p.37), the study program is financed in accordance with the cost of the study programme set by the Cabinet of Minister. (Cabinet of Ministers' Regulation No 994 of 12.12.2006. "Procedures for financing higher education institutions and colleges from state budget funds").

According to SAR (p.41), the Director of Finance and Personnel ensures that the persons preparing the budget shall act in accordance with the instruction "Planning, Execution and Control of the Liepaja University Core Budget" during the budget planning and execution process. Budget planning is carried out in accordance with the QMS procedure A-2-1 "Core Budget Planning", and execution and control in accordance with procedure A-2-2 "Execution and Control of the Core Budget."

According to SAR (p.40), allocation of cost within the program is done according to the actual needs of the program and in consideration of the development strategy of LiepU.

According to SAR (p.37), the financial resources available to the study program consist of the state budget subsidy (the majority of the budget income) and own income (tuition fees).

According to SAR (p.37), the amount of tuition fee and the payment procedure for each academic year shall be determined and approved by the LiepU Council.

According to SAR (p.37), the provision of financial resources is stable. The base cost per state-funded study place is set at EUR 1,630.11 in 2022. The tuition fee for the full-time academic Bachelor's study programme "Computer Science" in English was increased from EUR 2,200 to EUR 2,500.

The calculation of the projected costs of the doctoral study programme "E-learning technologies and management"" for full-time study for the period 2021-2022 is based on the base costs for 2021 (EUR 1,630.11 per one study place) and the coefficient of the thematic area of education "Computer science" established by the Ministry of Education and Science: 1.5, as well as the cost coefficient for professional bachelor-level study programmes: 3.0 The cost per study place in 2022 is EUR 10 095.30 (SAR, p.38).

The approved tuition fee for full-time study for the first year of the academic year 2022/2023 is EUR 4,100 (in English - EUR 4,200) (SAR, p.38).

SAR provides different figures for the number of enrolled students. On p.131, the average number of students enrolled during the reporting period is 2-3 per year. On p.132, SAR reports admitting 1-4

doctoral students each year. The total number of students in the program remained stable between 2013 and 2021 at the range of 9 to 14. 8 students are reported to have graduated during the reporting period (2013-2021), while 10 students reported exmatriculated.

The SAR reported (p.38) minimum number of students per course is 10.

Conclusions on this set of criteria, by specifying strengths and weaknesses

Conclusions
Given the procedures reported in SAR, and not having identified facts proving otherwise during the Experts' visit to HEI, it can be concluded that the study provision, scientific provision, informative provision (including library), material and technical provision and financial provision comply with specific features and the conditions for the implementation of the study programme, create prerequisites for the achievement of the learning outcomes and indicate the possibility to ensure a high-quality study process
At the same time, during the meeting with academic staff it was brought to the Experts's knowledge, that not 100% of applications for funding research activities are approved, and that the teaching staff is not aware of the possibility to obtain a personal laptop for the delivery of work-related tasks.
Given the procedures reported in SAR, and not having identified facts proving otherwise during the Experts' visit to HEI, it can be concluded that the funding available to the study programme, funding sources and the use of funding ensures full implementation of the study process.
SAR (p.38) reports the minimum number of students per course is 10. During the last four years (2018-2021) the number of students per course varied between 1 and 4, which is far below the profitability threshold. With the exception of the last two years (2020-2021), since the beginning of the reporting period (2013) the number of exmatriculated students was the same or exceeding the number of graduating students.
On p.156, SAR reports on a new HorizonEurope project "TED4LAT Twinning in Environmental Data and Dynamical Systems Modelling for Latvia", in which the teaching staff members involved in the doctoral programme plan to participate. Participation in the project focused on environmental data and dynamic systems modeling is of questionable value to the staff of the program on e-Learning technologies, and can be perceived as an obstacle to engaging in research on the topics associated with the study program

Strengths
1. qualified academic personnel;
2. good material and technical base;
3. great opportunities to use Internet, library electronic data bases;
4. good opportunities to engage in research, including funded projects;
5. sufficient financial provision.

Weaknesses
1. Low number of graduates / high number of drop-outs;
2. The number of students below the financial profitability threshold of the program.

Assessment of the requirement [6]

1. R6 - Compliance of the study provision, science provision (if applicable), informative provision (including library), material and technical provision and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of learning outcomes

Assessment of compliance: Fully compliant

Apart from the low number of students and the high drop-out rate,, the study provision, scientific provision, informative provision (including library), material and technical provision and financial provision comply with specific features and the conditions for the implementation of the study programme, create prerequisites for the achievement of the learning outcomes and indicate the possibility to ensure a high-quality study process

2.4. Teaching Staff

Analysis

2.4.1.
The study programme is implemented by the teaching staff of Riga Technical University (RTU), University of Liepaja and VIA (SAR, p. 147).
SAR indicates that all academic staff involved in the study programme comply with the conditions for the implementation of the study programme and the requirements of the regulatory enactments (e.g. the Law on Higher Education Institutions, "Regulations on elections to academic positions", "Criteria for the evaluation of professional qualifications of academic staff for courses" (available at kvs.liepu.lv). To ensure that doctoral students have a broad enough range of research, the study programme includes a relatively large number of academic staff. Teaching staff hold a doctor's degree, the position of a professor, associate professor, docent, lecturer, senior researcher or researcher (SAR, p. 147). There are 16 lecturers involved in the implementation of the program; of these, 8 (50%) are elected in the University of Liepaja. The teaching staff involved and the corresponding courses of study are given in the table on pages 147-149 in SAR.

Both the SAR and the interviews with students, graduates, employers and lecturers make it possible to state that the study programme involves competent lecturers who are interested in promoting the acquisition of students' knowledge, skills and professional competence.

2.4.2.
In order to ensure high-quality and innovative implementation of the study programme, several criteria are used for the selection of the academic staff to be involved in the programme, making sure that the courses are taught by qualified, scientifically, and methodologically prepared instructors, specialists in the field of study. The mandatory criteria for selecting the teaching staff are: 1) the qualifications of teaching staff meet the requirements set by applicable laws and regulations; 2) research area/interest relevant to the study programme/course;3) appropriate knowledge of the official language and of foreign languages. The selection of teaching staff for the implementation of study programmes is based on the 'Criteria for the evaluation of professional qualifications of academic staff for courses' (Approved byLiepU Study Council on 13 June 2005; available at kvs.liepu.lv).

The assessment criteria are described in detail in SAR (p. 48) and include doctoral degree appropriate to the course taught or one in a related field, and publications in a sub-discipline or field of artistic creativity. The requirements set for the candidates for a teaching position are set in accordance with the Liepaja University "Regulations on elections to academic positions". The requirements for the selection and participation of foreign teaching staff in the teaching of study programmes are specified in the Liepaja University Academic Staff Development Plan for 2018–2022 (p. 48, SAR). According to the Law on Higher Education Institutions, and the Liepaja University 'Regulations on elections to academic positions' of 20 June 201, residents of the Republic of Latvia and foreign citizens can be elected to academic positions, and their election to academic positions is

governedby these regulatory documents.

According to SAR (p. 149) during the reporting period, the staff was generally renewed (compared to the previous reporting period in 2013) and actively involved in scientific activities, leading and implementing scientific projects related to the development of modern e-learning technologies. The projects sought new e-learning technology solutions. After 2013, the most prominent research areas are related to data analysis, learning analytics and the organization of large-scale teacher training courses in areas related to modern technologies. A new technology for monitoring and visualizing perceptions of knowledge was developed. It was mentioned that for their work of the last decade "Interdisciplinary research on how to transform traditional e-learning technology into a real learning ecosystem of the Digital Age", they received the Latvian Academy of Sciences' Certificate of Recognition in 2022 (SAR, p. 149).

In order to ensure further research development, the Horizon Europe project "Twinning in Environmental Data and Dynamical Systems Modelling for Latvia/ TED4LAT" was prepared in 2021. The project has been rated highly (14 out of 15 points) by EC experts and has been nominated for funding. Within the project, the University and RTU lecturers and doctoral students can learn new data processing and dynamic modeling methods. The TED4LAT project provides an opportunity to attract doctoral students, new lecturers and to upgrade the E-learning technologies research strand for the future development of the programme (SAR, p. 149).

It was evident that the necessary procedures for recruitment of staff have been established and the staff has been renewed compared to the previous reporting period. The University purposefully takes measures so that changes in the composition of the teaching staff do not negatively affect the quality of the implementation of the study programme.

2.4.3.
The research production of the study field in general is rather modest (only two researchers have h-index in the Web of Science as 6 and two have as 5, all others have much lower or non-existent; in the Scopus it is a bit higher, but not too much). Internationally, such an h-index is considered a rather modest indicator. It seems that the main goal is to engage students in research projects, rather than focusing on high-level research, that is, how to contribute to nationally and internationally recognized research.

Both SAR and the interviews with lecturers of the study programme and doctoral students confirmed that the lecturers involved in the study programme had been successful in applying for international projects, which made it possible to develop doctoral studies and to connect the research work of doctoral students with these projects.

Unfortunately, it is somewhat surprising that, despite e-learning research and several innovative projects, as well as international and national recognitions, the teaching staff of the entire Faculty did not demonstrate technological or methodological innovation. The students also did not refer to the use of modern teaching and learning methodologies and technologies by the teaching staff. Therefore, it strongly recommended applying the results of the research into everyday practice.

Based on the interviews with the academic staff, it can be concluded that the motivation of the academic staff to contribute to the research activities is not effectively supported at the University and there are no clear mechanisms for their involvement.

2.4.4.

Each member of the academic staff of this study programme has published at least one publication in peer-reviewed editions, including international editions, in the last six years. This is a requirement set out in the assessment criteria. This is a very lenient criterion, and an active researcher should publish at least one high-quality publication per year, and a productive researcher even more.

2.4.5.
Cooperation between teaching staff is actively pursued at several levels, using different forms of cooperation as appropriate. Study courses, teaching materials, the study programme, the development strategy and the sustainability plan are continuously updated, supplemented and improved. New courses are created or added to take account of developments in the sector. Joint events are organized where faculty members become more familiar with the content and methods of the courses they teach to avoid duplication of content and to enable transdisciplinary collaboration in the course (SAR, p. 159).

An important form of cooperation between the study programme's staff is the preparation and implementation of joint international and national projects. For example, in recent years, the project ARTSS of the COVID programme of the Latvian Academy of Sciences, within the framework of which extensive research and trials were carried out on the technology of knowledge perception monitoring was implemented. As a result of successful cooperation Horizon Europe project "TED4LAT Twinning in Environmental Data and Dynamical Systems Modelling for Latvia" was jointly prepared. The project has been highly commended by the European Commission and has been put forward for funding. The project will train doctoral students and supervisors in advanced dynamic modeling techniques (SAR, p. 159).

Together with strategic partner Coursera, the programme implementers have prepared a new project proposal for EduAim, which will enable the programme to become more internationally active (SAR, p. 159).

Thus, the teaching staff employed in the study programme cooperate in the development and implementation of joint research and projects, as well as in the development of the content of the courses in the field of study and inthe exchange of information on current developments in the field and in the study process. .The Faculty has developed a good culture of internal collaboration. However, no formal mechanism has been developed for the promotion of mutual cooperation between academic staff. Interviews with academic staff confirmed that there are regular meetings to exchange information and that academic staff share information about the content of their courses and the teaching methods they use.

Conclusions on this set of criteria, by indicating strengths and weaknesses

Conclusions:
The directions of scientific research of the study field comply with the development aims of the University. There is a conviction that the study process is successfully implemented in the institution. Competencies of academic staff of the study field are relevant, but the number of high-quality publications should be higher. Good collaboration with Riga Technical University in this study programme, the researchers of RTU contribute to the research of the study field. The teaching staff of the curriculum have created opportunities for students to participate in several research projects and projects that support doctoral studies. It seems that the main goal is to engage students in research projects, rather than focusing on high-level research, that is, how to contribute to nationally and internationally recognized research. The University has not yet developed sufficient mechanisms for the involvement of teaching staff in high-level scientific research. It seems that only

publishing (Scopus and WoS) counts, not applying for and receiving research projects, organizing research conferences and workshops, reviewing doctoral theses at foreign universities, being a member of the editorial boards of pre-reviewed international journals, reviewing research articles in research journals, etc. In open science, the focus is on involvement in open science initiatives, not on supporting faculty in research data management (e.g. creating data management plans). It seems that the university and the study field do not have an accurate and reliable system for recording the research results of the academic staff. The research production of the study field is rather modest. The motivation of the academic staff to contribute to the research activities is not effectively supported. Innovative solutions (methodological and technological innovation) are implemented in the study process to a small extent. The teaching workload of academic staff is an obstacle for scientific research and perhaps also for methodological and technological innovation.

Strengths:
1. The directions of scientific research of the study field comply with the development aims of the University.
2. There is a conviction that the study process is successfully implemented in the institution.
3. Competencies of academic staff of the study field are relevant.
4. Good collaboration with Riga Technical University, the researchers of RTU contribute in the research of the study field.
5. The teaching staff of the curriculum have created opportunities for students to participate in several research projects and projects that support doctoral studies.

Weaknesses:
1. It seems that the main goal is to engage students in research projects, rather than focusing on high-level research, that is, how to contribute to nationally and internationally recognized research.
2. The University has not yet developed sufficient mechanisms for the involvement of teaching staff in high-level scientific research..
3. It seems that the university and the study field do not have an accurate and reliable system for recording the research results of the academic staff.
4. The research production of the study field is rather modest.
5. The motivation of the academic staff to contribute to the research activities is not effectively supported.
6. Innovative solutions (methodological and technological innovation) are implemented in the study process to a small extent.
7. The teaching workload of academic staff is an obstacle for scientific research and perhaps also for methodological and technological innovation.

Assessment of the requirement [7]

1 R7 - Compliance of the qualification of the academic staff and visiting professors, visiting associate professors, visiting docents, visiting lecturers and visiting assistants with the conditions for the implementation of the study programme and the requirements set out in the respective regulatory enactments.

   Assessment of compliance: Fully compliant

   The qualifications of the academic staff in the study program meet the required level.

2.5. Assessment of the Compliance

Requirements

1   1 - The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard

    Assessment of compliance: Not relevant

    N/A

2   2 - The study programme complies with a valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided if the completion of the study programme leads to a professional qualification (if applicable)

    Assessment of compliance: Not relevant

    N/A

3   3 - The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 561 , Paragraph two and Section 562 , Paragraph two of the Law on Higher Education Institutions.

    Assessment of compliance: Fully compliant

    Attached study course descriptions
    (Annex P10) are prepared in latvian and english. Descriptions complies with regulations set forth in Law on Higher Education Institutions.

4   4 - The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure according to which state recognised documents of higher education are issued.

    Assessment of compliance: Fully compliant

    The provided Diploma sample complies with the procedure by which state-recognised documents of higher education are issued according to MK No. 202 "Kārtība, kādā izsniedz valsts atzītus augstāko izglītību apliecinošus dokumentus".

5   5 - The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions.

    Assessment of compliance: Fully compliant

    LiepU have 5 elected professors and associate professors involved in the implementation of the program. Their doctoral degrees and academic interests are related with the three core fields of the programme, i.e.,
    e-technologies (1 Dr.sc.comp.), learning (3 Dr.paed.), and management (1 Dr.sc.soc.). According to Latvian Science Classification (MK noteikumi Nr.595, 27.09.2022.), the field of Computing is spilt between Natural Science (Computer Science and Informatics) and Engineering Science (Information and Communication Technologies).
    Computer Science and Informatics is indeed classified as Natural Science.

6   6 - Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Higher Education Institutions.

    Assessment of compliance: Not relevant

    N/A

7   7 - At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts (if applicable).

Assessment of compliance: Fully compliant

Attached confirmation indicates that five teaching staff members hold doctoral degree. There is involved one Latvian Science Council expert of engineering sciences and technology and four experts of education.

8   8 - The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

Assessment of compliance: Fully compliant

7.D7.10./57 verifies that state language proficiency is compliant with MK. Nr. 733 "Noteikumi par valsts valodas zināšanu apjomu, valsts valodas prasmes pārbaudes kārtību un valsts nodevu par valsts valodas prasmes pārbaudi".

9   9 - The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language (if applicable).

Assessment of compliance: Fully compliant

Attached resumes of staff and LiepU confirmation letter Nr. 7.D7.10./55 verifies that language proficiency in English is at least B2.

10   10 - The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

Assessment of compliance: Fully compliant

Sample of attached study agreement complies with MK. Nr. 70 "Studiju līgumā obligāti ietveramie noteikumi".

11   11 - The higher education institution / college has provided confirmation that students will be provided with opportunities to continue their education in another study programme or another higher education institution or college (agreement with another accredited higher education institution or college) if the implementation of the study programme is terminated.

Assessment of compliance: Fully compliant

Attached contract Nr. 1.-2022/207 with Latvia University of Life Sciences and Technologies confirms that institution provides possibility to continue studies within doctoral study programme "Information Technologies".

12   12 - The higher education institution / college has provided confirmation that students are guaranteed compensation for losses if the study programme is not accredited or the study programme's license is revoked due to the actions (actions or omissions) of the higher education institution or college and the student does not wish to continue studies in another study programme.

Assessment of compliance: Fully compliant

LiepU confirmation letter Nr. 1.-1.6./245 states, that students are guaranteed compensation for losses if the study programme is not accredited or the licence of the study programme is

revoked due to the actions of the college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

13 13 - The joint study programmes comply with the requirements prescribed in Section 55.(1), Paragraphs one, two, and seven of the Law on Higher Education Institutions (if applicable)

Assessment of compliance: Not relevant

N/A

14 14 - Compliance with the requirements specified in other regulatory enactments that apply to the study programme being assessed (if applicable)

Assessment of compliance: Not relevant

N/A

Assessment of the requirement [8]

1 R8 - Compliance of the study programme with the requirements set forth in the Law on Higher Education Institutions and other regulatory enactments.

Assessment of compliance: Partially compliant

Study programme does not fully comply with requirements set forth by Law on Higher Education Institutions Section 55, Paragraph one, Clause 3. Non-compliance with other regulatory enactments was not found.

General conclusions about the study programme, indicating the most important strengths and weaknesses of the study programme

The study programme does not fully comply with requirements set forth by Law on Higher Education Institutions Section 55, Paragraph one, Clause 3.
The study program both by its title, degree, qualification and curriculum is consistent with the study field "Information technologies, computer engineering, electronics, telecommunications, computer management and computer science". The title, code, degree and obtainable qualification are interrelated and coherent and fall within the scope of the general aims of the study programme.
No major deficiencies which could not be eliminated during the 2-year accreditation period were identified.
The study program is delivered in two languages: Latvian and English.
It must be verified whether the study programme may has the minimum number of students to ensure the profitability of the study programme".
The study program can continue to be implemented in all declared implementation options, in all applied implementation languages and in all applied implementation places.
The experts identify the most important weaknesses and strengths identified in the study programme.

Strengths:
1. Cooperation with RTU
2. Regular meetings of doctoral students with their supervisors, as well as other types of stimulating events for doctoral students
3. The teaching staff of the curriculum have created opportunities for students to participate in several research projects and projects that support doctoral studies.
4. qualified academic personnel;
5. good material and technical base;
6. great opportunities to use Internet, library electronic data bases;

7. good opportunities to engage in research, including funded projects;

8. sufficient financial provision.

9. The directions of scientific research of the study field comply with the development aims of the University.

10. There is a conviction that the study process is successfully implemented in the institution.

11. Competencies of academic staff of the study field are relevant.

12. Good collaboration with Riga Technical University, the researchers of RTU contribute in the research of the study field.

Weaknesses:

1. Relatively smaller engineering study course module and fewer engineering study courses compared to educational sciences orientation study courses.

2. Innovative teaching methods are observed to a very small extent

3. Doctoral students are not informed about publications' quartile indicators, as well as opportunities to publish for free.

4. Low number of graduates.

5. The number of students below the financial profitability threshold of the program.

6. It seems that the main goal is to engage students in research projects, rather than focusing on high-level research, that is, how to contribute to nationally and internationally recognized research.

7. The University has not yet developed sufficient mechanisms for the involvement of teaching staff in high-level scientific research.

8. It seems that the university and the study field do not have an accurate and reliable system for recording the research results of the academic staff.

9. The research production of the study field is modest.

10. The motivation of the academic staff to contribute to the research activities is not effectively supported.

11. Innovative solutions (methodological and technological innovation) are implemented in the study process to a small extent.

12. The teaching workload of academic staff is an obstacle for scientific research and perhaps also for methodological and technological innovation.

13. On p.156, SAR reports on a new HorizonEurope project "TED4LAT Twinning in Environmental Data and Dynamical Systems Modelling for Latvia", in which the teaching staff members involved in the doctoral programme plan to participate. The share of funding of RTU is 1.2 million EUR, the share of funding of the Liepaja University is EUR 0.4 million. EUR.

Participation of the program's academic staff and doctoral students in the HorizonEurope project "TED4LAT Twinning in Environmental Data and Dynamical Systems Modelling for Latvia" focused on environmental data and dynamic systems modelling is of questionable value to the program. It can be perceived as an obstacle to engaging in research on the topics of direct pertinence to the study program.

Evaluation of the study programme "E-studies Technologies and Management"

Evaluation of the study programme:

Good

2.6. Recommendations for the Study Programme "E-studies Technologies and Management"

Short-term recommendations

1. Develop and implement an accurate and reliable system for recording the research results of the academic staff.

2. The Study Programme leader must ensure that all courses are updated and contain contemporary content.

3. Provide doctoral students with information on publications' quartile indicators as well as the opportunities to publish for free

Long-term recommendations

1. Promote the career opportunities for graduates from the doctoral program to increase the number of enrollments; collaborate with social partners to offer and promote clear career path and employment opportunities for the graduate.

2. Re-evaluate the focus and the aims of research work by the students and the academic staff of the program. It seems that the main goal is to engage students in research projects, rather than focusing on high-level research. Evaluate the possibilities to contribute to internationally recognized research.

3. Improve the research production of the academic staff. E.g., offer incentives and support for publishing in internationally-recognized journals (not only conference).

4. The University should develop a strategy and action plan to increase the use of innovative solutions (methodological and technological innovation) in the study process. Use e-technologies program as a show-case for teaching innovation, including company training

5. The teaching workload of academic staff should be reassessed so that it does not stand as an obstacle for methodological and technological innovation.

6. Academic staff must be given training on the implementation of pedagogical and technological innovation in the learning process.

7. Training on using available possibilities of Moodle and learning design must be organized for academic staff.

8. Provide in the program as wide a selection of study courses in the field of engineering as in educational science

III - Assessment of the Requirements for the Study Field and the Relevant Study Programmes

III - Assessment of the Requirements for the Study Field and the Relevant Study Programmes

Assessment of the Requirements for the Study Field

Requirements	Requirement Evaluation		Comment
R1 - Pursuant to Section 5, Paragraph 2.1 of the Law on Higher Education Institutions, the higher education institution/ college shall ensure continuous improvement, development, and efficient performance of the study field whilst implementing its internal quality assurance system:	Partially compliant		Internal quality assurance system has procedures, but their description lacks important information, some regulatory documents have not been reviewed for a long period of time (see weaknesses list of section 1.2.)
R2 - Compliance of scientific research and artistic creation with the level of development of scientific research and artistic creation (if applicable)	Partially compliant		The University has not yet developed mechanisms for the involvement of the teaching staff in scientific research.
R3 - The cooperation implemented within the study field with various Latvian and foreign organizations ensures the achievement of the aims of the study field.	Partially compliant		The University has established good cooperation with institutions in Latvia and also abroad. Such cooperation contributes to the achievement of the aims and learning outcomes of the study field and the study programme.However, the University has not developed yet a sufficient system and procedures for the attraction of the teaching staff from abroad within the study field.
R4 - Elimination of deficiencies and shortcomings identified in the previous assessment of the study field, if any, or implementation of the recommendations provided.	Partially compliant		In some cases, the recommendations have been implemented, but not in others. It is still necessary to improve the involvement of students in making decisions related to the development of the study program, or more precisely in the analysis of student feedback. Strengthening the mechatronics part of the study program is still an essential necessity even now.

Assessment of the Requirements for the Relevant Study Programmes of the Study Field

No.	Study programme	R5	R6	R7	R8	Evaluation of the study programme (excellent, good, average, poor)
1	Information Technology (42484)	Not relevant	Fully compliant	Fully compliant	Fully compliant	Good
2	Smart Technologies and Mechatronics (42523)	Not relevant	Fully compliant	Fully compliant	Partially compliant	Average
3	Computer Science (43484)	Not relevant	Fully compliant	Fully compliant	Partially compliant	Average
4	Information Technology (47482)	Partially compliant	Fully compliant	Fully compliant	Partially compliant	Good
5	E-studies Technologies and Management (51482)	Partially compliant	Fully compliant	Fully compliant	Partially compliant	Good

The Dissenting Opinions of the Experts

No dissenting opinions