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Lead Beneficiary	All BY Partners
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Deliverable Description: Tools to measure the improvements in approaches & methods will be a complex result achieved in activity A.5.3 "Development of tools to measure improvements in the quality of approaches & methods". In the activity, the BY partners (after the workshop in Wroclaw where they learn the EU partners' experience in devising & developing methodology & tools for measuring improvements in pedagogical approaches & methods of teaching/learning) will work together with their EU colleagues to develop tools & measurements for assessing quality of improvements in pedagogical approaches/methodology. At the end of this work EU partners will send their QA experts (1 expert to each BY partner) to measure the increase in the quality of teaching/learning to "exploit" the developed tools & measures.	

Versioning and contribution history

Version	Date	Author	Notes
1.0	1.08.2020	Jolanta Kowal	Document related the collection of MACICT Tools to measure the improvements in approaches & methods in period 2018-2020
2.0	1.12 2020	Jolanta Kowal	Collection of MACICT Tools to measure the improvements in approaches & methods in period 2018-2020
3.0	16.09 2021	Jarostaw Klebaniuk, Jolanta Kowal	Developed version of the document on works executed by BY

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Document Purpose

This document describes and presents the tools that were elaborated commonly by QA Teams of Belarusian Partners according to the requirements of the MACICT Internal Quality Control.

Definition of Terminology (Glossary)

1. **Evaluation** is a process of a practical nature, the task of which is to determine whether a given element of the project, such as syllabuses, programs, modules, will enable the achievement of the assumed goals. Made by means of analysis, synthesis, generalization and inference. It means the process of systematic collection and analysis of information (quantitatively or qualitatively) (Sekutowicz 2006, p. 60).
2. **Tools to measure** the improvements in approaches & methods are questionnaires including quantitative indicators with short term impact and with long term impact of the improved teaching approaches and methods on education on the modernised MSc programme in ICT, and other assessment methods.
3. **The evaluation questionnaire** of MACICT meetings,
4. **Evaluation** of programs.

What is important in curriculum evaluation? What issues should be assessed and how to ask about them? Harriet Talmage (Ornstein, Hunkins, 1999, p. 316) has proposed five types of questions that can be used in curriculum evaluation (see Table 1).

Q1	Questions about the intrinsic value of the program
Q2	Questions about instrumental value
Q3	Relative Value Questions
Q4	Questions about the possibility of optimization
Q5	Questions about the final decision

- Questions about the intrinsic value of the program - they concern the compliance of the presented program content with the state of knowledge in a specific field, the validity of the arrangement, and the presentation of the content.
- Questions about instrumental value - they concern the purpose and addressee of the program. In the case of these questions, they are issues related to the program intentions and the effect of these intentions, i.e. students' achievements, e.g. the students have mastered the curriculum content?

Answering questions about the addressee of a program should decide whether the program is appropriate for a particular one group of students, which students will benefit most from the implementation of the program.

- Relative Value Questions - These are questions from teachers who are faced with choosing a new program and have to compare several documents. In the assessment, questions should be asked about students' achievements, ease of program implementation, requirements regarding the material base of the school (equipment, necessary materials), the nature and specificity of the school, and the needs of the local community
- Questions about the possibility of optimization - they relate to strengthening the effectiveness of the program implementation, eg: How does the program motivate students to work, increase their interest in learning? Or: How to improve the curriculum content, material, forms, and working methods to optimize the teaching process?
- Questions about the final decision. On the basis of the collected information, questions should be formulated regarding the rejection or modification of the curriculum.

We assumed that evaluations are activities in which the same procedures are used to test the effectiveness of the curriculum in various subjects. Therefore are general and universal.

5. **Evaluation** of modules

The modular program is a set of vocational training modules and the corresponding modular units, distinguished on the basis of specific criteria, which enable the acquisition of knowledge and shaping skills and attitudes appropriate to the profession. Modules comprise adequate courses and can be evaluated in a similar way like programs, using the same questions as above, however, to a narrower extent adapted to the degree of study, field of study and profile, and year of study.

6. **Evaluation** of syllabuses was related to concrete courses.

7. **Courses evaluation** by students

<https://docs.google.com/document/d/1UXUffEauHCHvwQAJA0C56BlolP8rLTuO/edit?usp=sharing&oid=115716322418517588212&rtpof=true&sd=true>

A1. The evaluation of learning activities at the beginning of 2021 can be seen at the link

Link to the survey Q3:

<https://docs.google.com/forms/d/16bJGCscvSP08FdxX8nRISC7zzhOzl3MuF8FU55CuVPY/edit#responses>

8. **Courses self-evaluation** by teachers

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D5.3 Tools to measure the improvements in approaches & methods

This project has received funding from Erasmus+ Programme of the European Union under Grant Agreement N° 598330-EPP-1-2018-1-DE-EPPKA2-CBHE-JP

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Evaluation of courses can be found in the link:

<https://docs.google.com/forms/d/e/1FAIpQLSecTGR86y09Mlpp7kof7idbUq0o7EB8GxE04lzi euUfgUaQeg/viewform>

4. Quantitative Indicators

4.1 Quantitative Indicators with short term Impact

4.2 Quantitative indicators with long term Impact

The tools using is reported fully in the report *QA intern all months*:

<https://docs.google.com/document/d/1GLSP8Y0ZMuAu-u0ndBiW6cGs5m-eCuuJC KclJyerfck/edit?usp=sharing>

In addition all results relating to tools to measure the improvements in approaches & methods are reported in *Table of achieved / planned results*

<https://docs.google.com/document/d/1KHEj5Nsd8emma5ADuM9kBO8hMcam0Vi-NOKlBrVQU78/edit?usp=sharing>

In order to create the tools there were focus groups discussions, then there were discussions during on-line meetings and subsequently there were workshops performed.

In summary - the project has several quantitative and qualitative indicators of quality. The data necessary to compute those indicators was collected during following rounds of on-line surveys and analysis:

1. Two questionnaires: for Bellarussian teachers and representatives of Bellarussian labor market were developed and administered in the period of April to June 2019. 48 teachers and 21 IT business representatives answered 28 questions, which enabled to formulate conclusions concerning teachers' needs for pedagogical approaches and methods of teaching, and labour market needs in Bellarussian regions. They were presented in two analytical papers. They can be found here https://docs.google.com/document/d/1qsNZdvO5iqoNtr9Jt9G1qLL3CtybVpJ3GCPjq1X_Ql8/edit?usp=sharing and here https://docs.google.com/document/d/1MamQlqOlq39T9_v0JGSXopQSx3E9tRHiySb7418Bv-A/edit?usp=sharing
2. In order to assess students' progress in acquisition of knowledge, skills and competences, and the content and the settings of the teaching process 'Evaluation Questionnaire of the

module' was developed. It was aimed at the evaluation of the courses conducted in the winter semester of 2020.

The questions can be found at <https://docs.google.com/forms/d/1xPHZ8xbbL1-9EgEGmkDA9qWac1O5lOyKA3mepSzOa-Y/edit> and the 59 sets of responses collected can be found here: <https://docs.google.com/forms/d/1xPHZ8xbbL1-9EgEGmkDA9qWac1O5lOyKA3mepSzOa-Y/edit#responses>

All the courses proposed by such universities as BSUIR, GSTU, BrSTU, YKSUG were analyzed in the winter semester. They were rated very highly by students in the following aspects: acquisition of knowledge and skills, acquisition of competences, the content and teaching process, the settings of the courses. Students highly appreciated the development of knowledge, skills, social competencies, teachers' course teaching, and organizing. The survey was conducted in the period January to March 2021.

3. In order to master the course syllabuses their revisions were performed. In the period from October 2020 to May 2021 the reviewers evaluated 51 syllabuses, of which 38 were reviewed twice, the second review following the initial revision. All the re-submission that had been revised again were resubmitted for the second time and void of any mistakes pinpointed in the second review. In most cases, no further issues were found in the syllabuses during the second perusal by the Quality Assurance team. Overall, the final versions of the syllabuses were evaluated very good or excellent and as such constitute useful didactic tools and teaching references.

The syllabuses, their reviews and revised versions can be found here:

<https://docs.google.com/spreadsheets/d/1P6bln9q-tfHgecQ0bedwD6bxgC9O6ggJ/edit#gid=601952528>

4. In order to obtain a self-evaluation of the course design from Bellarussian teachers an on-line survey was administered in May and June 2021. It was finished by the 1st of July. 42 of them answered 27, mostly open, questions. The responses were analysed both quantitatively, and qualitatively. Most of the teachers were satisfied with the contents of the courses and methods used. In their opinion the learning outcomes outside of the course contents were diverse. In most cases the learning outcomes, in the teachers' opinion, were based both on theory and skills (practice), were specific, attainable, and measurable.

Short characterisation of the students taught allows for a conclusion that most of them are young (in their early twenties) but already with some professional experience in IT companies, active, motivated, interested in learning. According to the teachers, students need professional knowledge and practical skills (including the soft ones) enabling them to either work in an IT company or to assemble their own business team. In order to accomplish those goals they need honing their capabilities and gathering new experiences in programming. Also, the communication and motivational skills are needed, as well as free time and space for creativity, and something as rudimental as high-quality Internet.

All the questions and responses can be found here:

<https://docs.google.com/forms/d/e/1FAIpQLSecTGR86y09Mlpp7kof7idbUq0o7EB8GxE04lzi euUfgUaQeg/viewform>

-
5. In order to assess the quantitative indicators of the quality of the implemented project a 61-item questionnaire was administered in July 2021 to academic staff involved in the MACICT. Twelve sets of responses were gathered. The answers can be found here: https://docs.google.com/forms/d/1QRVjONyDgkckKVO5ITd91AaldaCDB_HAfQ-Au6ei0qcw/edit#responses
6. In order to assure high quality assurance standards several workshops and on-line discussions were held. They are listed below.
- 6.1. During the Kick-Off Meeting in March 2019 in Minsk, Belarus, a workshop in didactics was organized by EU staff, within which a general framework for quality control activities during the implementation of the project was outlined.
- 6.2. During the conference ICTM in October 2019 in Wroclaw, Poland, and next during the the 1st consortium meeting QA-team, conducted following workshops:
Use of modern technologies in psychological studies: recording, observing, coding, and analyzing behavior of children and their parents prior to the child's hospital operation.
ICT courses for students and teachers - their tasks and methodology
Willpower related skills
Innovation- how can Artificial Intelligence develop educational programs for students?
- 6.3. In the workshops in May 2019 in Polotsk, Belarus, Lecturer introduced the audience to didactic innovations in the field of teaching IT courses.
- 6.4. In February 2020 in Brest, Belarus, in the course "Didactic Seminar on the Basis of Didactics ", the project partners studied best practices in the application of new didactic approaches and teaching methods to develop the key skills and competencies.
- 6.5. In May 2020 the first didactic course was replayed online on Zoom.
- 6.6. In May and June 2020, after discussions with EU partners and BY partners developed their own methods, procedures and guidelines of QA for the modernised MSc programmes.
- 6.7. In July 2020 an online meeting was held by EU partners and BY partners with the aim to measure the increase in the quality of approaches in Belarus.
- 6.8. In the period from June 2020 till January 2021 three workshops about learning outcomes were held and repeated on Zoom.
- 6.9. In the period from January till May 2021 Several meetings of EU and BY partners were held with the aim to share experience and check quality of task completion.

For the full description please resort to the Tables of achieved results:

<https://docs.google.com/document/d/1rcT18XRHR7YEJndWMzx29yNkzaKidOazl0GtuOVV7Hg/edit?usp=sharing>

<https://docs.google.com/document/d/1hE4uuLeE0SknB4Qd8kVsUH0LiKNz5mA81QIJA7sSv1E/edit?usp=sharing>

https://docs.google.com/document/d/16Kvh_GukZK8q6oC9e4WLdFN-ikBX_THNtLQZ-qt6RWc/edit?usp=sharing

9.1 Quantitative Indicators with short term Impact

#	Indicator
1	Number of university academic staff members involved in the modernisation of the MSc study programme in ICT at the 5 BY partners
2	Figures of the measured improvements in pedagogical approaches
3	Number of students' positive feedbacks during evaluation measurements
4	Number of other staff at the partner & other BY universities who "borrowed" the improvement practices
5	Figures of the measured improvements in teaching & learning methods
6	5 existing professional courses made interdisciplinary by interacting staff from different departments
7	5 new soft/transferable skills courses elaboration by academic staff belonging to different departments
8	Number of academic staff interacting during the modernisation of the MSc study programme in ICT at the 5 BY partner universities & during the running of the programme

9	Number of MSc students successfully using new skills during practical classes on the programme
10	Number of students successfully completed studies on interdisciplinary 5 professional & 5 soft/transferable skills courses
11	Figures of quality checks of the modernised MSc programme testifying to the increased soft/transferable skills in the MSc students
12	Number of new approaches to MSc dissertation supervision developed in the project
13	Number of successful MSc dissertations presented & defended on the modernised MSc programme
14	Number of positive reviews on the quality of research in MSc dissertations on the programme
15	Numbers of BY & EU students taking part in the international student groups organised by mixing 2 BY students & 2 EU students in each group for solving real-life problems offered by the two BY international ICT companies
16	Number of the international student groups organised for solving real-life problems offered by the two BY international ICT companies
17	Number of BY & EU staff interacting whilst running the supervision of the international student groups' work on such projects
18	Number of methods, tools & procedures designed & used for the internal QA of the modernised MSc study programme in ICT at the 5 BY partner universities
19	Number of tools & procedures applied to assure high standards of the run MSc programme
20	Number of students participating in the QA; Number of Labour Market representatives participating in QA of the programme

21	Number of changes in the curricula with the help of students, labour market representatives, and managerial staff at the 5 BY partners
22	Number of questionnaires, surveys, focus groups, monitoring forms, & interviews conducted
23	Number of reports & recommendations for follow-ups analysed by the managerial & academic staff responsible for the modernised MSc study programme in ICT at the 5 BY partners
24	Number of consultations provided by the EU partners' experts in following up the QA activities
25	Number of changes in the structure, design, & contents of the modernised MSc programme
26	Number of the other BY universities' staff & master students participating in the dissemination activities on the project (Information Days, Final Conference in Belarus, for example)
27	Number of staff from the other BY universities willing to take up the best practices of this project to their work on similar master programmes (results of questionnaires on participation in dissemination activities of the project)

9.2 Quantitative indicators with long term Impact

#	Indicator
1	Number of new pedagogical approaches used by the academic staff involved in the delivery of the modernised MSc programme
2	Number of new &/or upgraded interdisciplinary courses on the modernised MSc study programme
3	The number of enrolled students on the MSc programme in ICT compared to the previous years

4	Number of positive feedbacks from enterprises and institutions that employed the graduates
5	Number of possible start-ups in the ICT sector
6	Number of possible joint international ventures in the ICT sector
7	Number of success stories of the MSc programme's graduates
8	Number of possible double-degree MSc study programmes in ICT developed jointly by some BY & EU partners
9	Number of students enrolled on such possible MSc study programmes in ICT
10	Number of other global ICT market companies are attracted to the development of the curriculum on such possible master programmes

10. Qualitative Indicators

Annex 10.1 The QA internal report to provide information on reviewing process of the syllabuses provided by Belorussian partners

<https://docs.google.com/document/d/1UynUdzx4YA79rqs5KkzVM3TwG2TP1zex/edit?usp=sharing&oid=111077442654891082326&rtpof=true&sd=true>

According to WP05 "**D5.1. Report on the EU practices in QA**", and "**D5.2. QA procedures & guidelines for the MSc in ICT at BY partners (the development of training programs)**", the MACICT QA team have developed The Review form "Review form of the syllabus_2020.03.10", available at:

<https://docs.google.com/document/d/1NiXjfZGuQNQUUZ5WR4nbLxzy6OkbfzM/edit?usp=sharing&oid=111077442654891082326&rtpof=true&sd=true>

This QA internal report on the reviewing process of the syllabuses provided by Belorussian partners.

Link to the "Review form of the syllabus_2020.03.10", available at:

<https://docs.google.com/document/d/1NiXjfZGuQNQUUZ5WR4nbLxzy6OkbfzM/edit?usp=sharing&oid=111077442654891082326&rtpof=true&sd=true>

Link to the programs, list of syllabuses and reviews "Current state courses.xlsx":

<https://docs.google.com/spreadsheets/d/1P6bln9q-tfHgecQ0bedwD6bxgC9O6ggJ/edit#gid=601952528>

Link to the “Reviews of syllabuses”:

<https://drive.google.com/drive/folders/1hwp3KWNqKzq3MA12vj02ITB4BC-L-eJ4?usp=sharing>

Syllabuses were made available to the reviewers from the University of Wrocław at the link: “Current state courses.xlsx”:

<https://docs.google.com/spreadsheets/d/1P6bln9q-tfHgecQ0bedwD6bxgC9O6ggJ/edit#gid=601952528>

After reviewing, the reviewers published the syllabuses in the catalogue: **Link to the** “Reviews of syllabuses”:

<https://drive.google.com/drive/folders/1hwp3KWNqKzq3MA12vj02ITB4BC-L-eJ4?usp=sharing>

and under the link: “Current state courses.xlsx”:

<https://docs.google.com/spreadsheets/d/1P6bln9q-tfHgecQ0bedwD6bxgC9O6ggJ/edit#gid=601952528>

Internal report on teachers self evaluation January 2021 and July 2021:

The link to survey RT was sent to all BY partners of MaCICT project with a request to involve the MACICT teachers from each university. As a result, the current analysis is an internal report on the evaluation of the courses conducted in the winter semester of 2020/2021. Forty two teachers fulfilled the questionnaire by 06.07.2021.

Annex D5.11

https://docs.google.com/document/d/1_5v2Cgd4vX-tY0MsvQmdlcpXR-xxiC3e/edit#heading=h.3rdcrjn

Questionnaire

D5.11 https://docs.google.com/forms/d/1yQd1hdfYW8R4IKISVR3bomAj_IGpUisc7c5Tywhwils/edit

Document References

1. E. Mäkiö-Marusik, F. Azmat, B. Ahmad, R. Harrison and A. W. Colombo, "Evaluation Instrument for Engineering Modules and Courses," 2019 IEEE 17th International Conference on Industrial Informatics (INDIN), Helsinki, Finland, 2019, pp. 1139-1144, doi: 10.1109/INDIN41052.2019.8972155.
- 2.. Elena Mäkiö-Marusik, Elena and Mäkiö, Juho and Kowal, Jolanta, Validation of Task-centric Holistic Agile Approach on Teaching Cyber Physical Systems Engineering (December 30, 2017). GOSPODARKA RYNEK EDUKACJA = ECONOMY MARKET EDUCATION, Vol. 18, Nr 4, 2017, 5-17., Available at SSRN: <https://ssrn.com/abstract=3118468>
3. Juho Maekioe, S. Piashkun, Jolanta Kowal, M. Paasivaara, E. Surkova (2019). Fit for the future - Modernisation of Master Curriculum in ICT for Enhancing Student Employability in Belarus / // EDULEARN. - Vol. 17 (2019), s. 9116-9122
Available at: <https://library.iated.org/view/MAKIO2019FIT>
4. Sekutowicz, K. (2006), Monitoring and evaluation [in:] D. Głazewska (ed.), Management, planning and evaluation of own activities/ In Polish: Monitorowanie i ewaluacja [w:] D. Głazewska (red.), Zarządzanie, planowanie i ocena własnych działań, Warszawa: Akademia Rozwoju Filantropii w Polsce.
5. Hunkins, F. P., & Ornstein, A. C. (2016). Curriculum: Foundations, principles, and issues.
6. Proposal final: Modernisation of Master Curriculum in ICT for Enhancing Student Employability / MaCICT. MACICT Project 2018-2022.

Other Appendices

MACICT meetings evaluation form

<https://docs.google.com/document/d/1ZUEuL1jO4oqd6RLscQZjokcusOnQ5SAx/edit>

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D5.3 Tools to measure the improvements in approaches & methods

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9. Course evaluation scheme:
<https://drive.google.com/file/d/1ShqTUNKyirujDVd49m2wQtY-hr7T4OD/view?usp=sharing>
 10. Review form of the syllabuses:
<https://drive.google.com/file/d/1NiXjfZGuQNQUUZ5WR4nbLxZrY6OkbfzM/view?usp=sharing>
 11. Teachers....Questions for Self-evaluation of the course design_BELL (1)
https://drive.google.com/file/d/1ycN8-5FUL_JHTFQw_poW_GsKcQHrLUuJ/view?usp=sharing
 12. The questionnaire – course evaluation by students_Appendix 1.docx
https://drive.google.com/file/d/1d9gSVLhOV_k6fZr0ZLxqiGGahj0Sx2tg/view?usp=sharing
 13. D1.1 Record of BY teachers' reflections & analytical conclusions (YKSUG: Lada Rudikova, Hanna Karkanitsa, Anna Deytseva)
https://docs.google.com/document/d/1qsNZdvO5iqoNtr9Jt9G1qLL3CtybVpJ3GCPjq1X_Ol8/edit
 14. D1.2 Annex 1. Questionnaire for assessing employer satisfaction with the quality of graduate training for employer
<https://docs.google.com/document/d/1TVu-ePxnADeMZWixfgrz17Md2jfgazgV/edit>
 15. D1.2 Annex 1. Questionnaire for assessing employer satisfaction with the quality of graduate training
https://docs.google.com/document/d/1ru2UeT1kxWlp1_SrbSu84Ybub8drpetl/edit
 16. MACICT Review form for the deliverable:
https://docs.google.com/document/d/1U-e-SRhtYSY_EXiWoFWWkAyZzghU_1u9/edit
 17. Quality Assurance hierarchy scheme and plan.

18. <https://docs.google.com/document/d/1Wh7sSLv64T4LznYLwaZXg9v0wlnCM4pCaF/ElsWteKYA/edit?usp=sharing>
19. <https://docs.google.com/document/d/1Wh7sSLv64T4LznYLwaZXg9v0wlnCM4pCaF/ElsWteKYA/edit?usp=sharing>
20. <https://docs.google.com/document/d/1Wh7sSLv64T4LznYLwaZXg9v0wlnCM4pCaF/ElsWteKYA/edit?usp=sharing>

1. MACICT MEETINGS EVALUATION FORM

This document evaluates different forms of meetings. BY Partners comments enable the MACICT Project Partners to better plan and execute future MACICT meetings and tailor the meetings to meet BY Partners needs.

The results of the research on the basis of the questionnaire allow to determine the reasons and satisfaction with participation, in relation to the content, network, personal development, speakers, the most favorable aspect of the meeting, the registration process, place, discussion, competence development, project knowledge, communication competences between project partners. The results make it possible to establish and refine the plan and program of the next meetings and to encourage the participation of partners.

We invite you to fill out the form:

MACICT MEETING

Thank you for taking the time to participate in the MACICT MEETING evaluation. Your comments will enable us to better plan and execute future the MACICT meetings and tailor the meetings to meet your needs.

Sincerely,
MACICT TEAM

Did the MACICT meeting fulfill your reason for attending?

Yes -- Absolutely

Yes -- But not to my full extent

No

Other:

Please specify the main reason for attending this MACICT meeting:

Content
Networking
Personal Growth & Development
Speakers
Other:

Did the MACICT meeting fulfill your reason for attending?

Yes -- Absolutely
Yes -- But not to my full extent
No
Other:

Overall, were you satisfied with the MACICT meeting? What was the most beneficial aspect of the MACICT meeting?

Very Dissatisfied 1 2 3 4 5 Very Satisfied

How likely do you plan to attend the MACICT meeting next time?

Will Not Attend 1 2 3 4 5 Extremely Likely

Please indicate your overall satisfaction with this MACICT meeting content

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Please indicate your overall satisfaction with this MACICT meeting organization (registration process, venue)

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Please indicate your overall satisfaction with this MACICT meeting discussion

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Please indicate your overall satisfaction on your competencies development during this MACICT meeting

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Please indicate your overall satisfaction on your project knowledge development during this MACICT meeting

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Please indicate your overall satisfaction on your project organizational skills development during this MACICT meeting

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Please indicate your overall satisfaction on your communication competences

between partners development during this MACICT meeting

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Which topics would you be interested to learn more about at the next year's
MACICT meeting?

.....

Please share any Other feedback you have about the MACICT meeting and how
we can improve it or the meetings that you would like to see explored next year:

Send please

Course evaluation scheme

<https://drive.google.com/file/d/1ShqTUNKYirjujDVd49m2wQtY-hr7T4OD/view?usp=sharing>

The fulfilment of the first two objectives (1a and 1b) will ask for a change

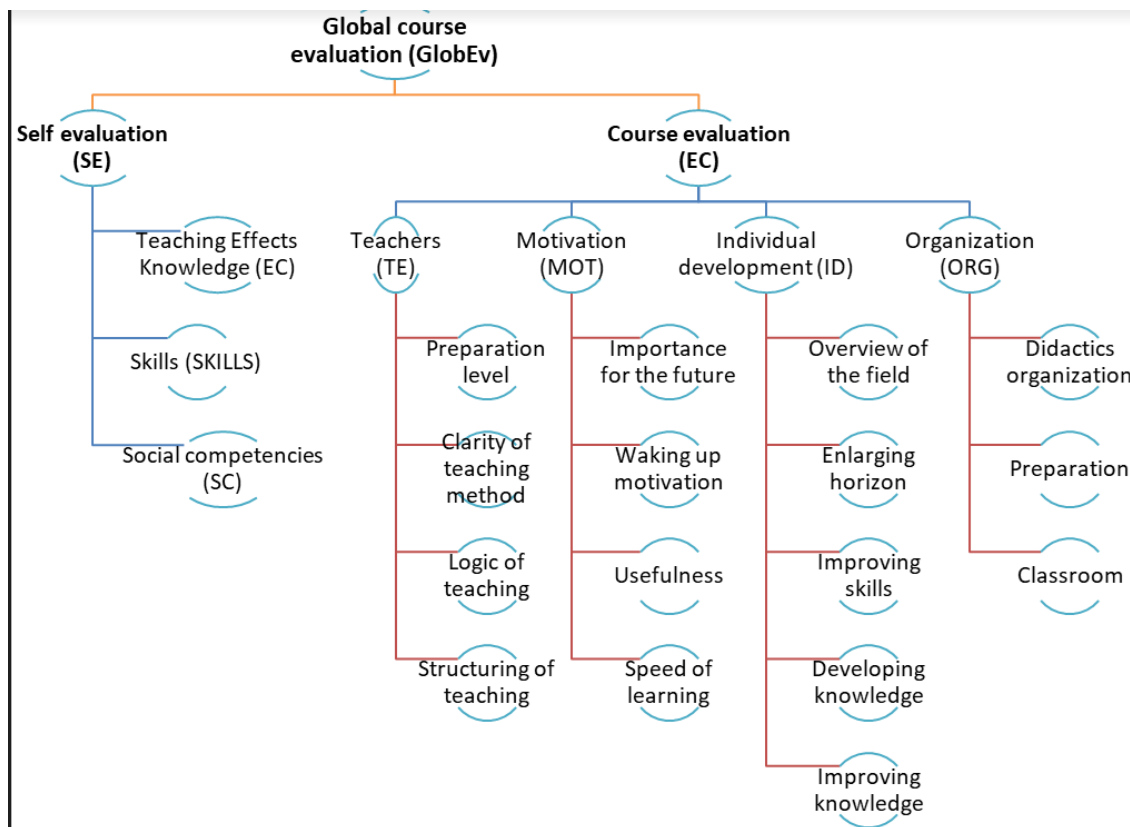
- in pedagogical attitudes, approaches and methods of education in Belorussian teachers,
- in students' mindsets and their adaptability to society and market, and
- on the labour market where graduates from the modernised interdisciplinary MSc study programme in ICT will get better possibilities of employment.

A desirable further result of the project is that some of the graduates will be able to start their own business.

The 3rd and 4th objectives will enhance the quality of the programme and bring it closer to the demands of the labour market and society.

The last 3 objectives will allow implementation of the modernised MSc study programme and its quality control, improvements and optimization of the programme, and enhance the international dimension of the programme. We assume global evaluation of proposed methods depicted on the scheme depicted in Fig. 1, according to Maekioe et al. (2019).

Figure 1. Scheme of course evaluation



For the MACICT study on the quality of the module "WM318 Sustainable Energy Systems" the Bellorussian Partner asked students to complete this questionnaire in full anonymously. For each statement it is possible to select only one of 5 options – Definitely Agree; Mostly Agree; Neither Agree nor Disagree; Mostly Disagree; or Definitely Disagree. The questionnaire was elaborated according to the evaluation scheme proposed by BY Partners.

https://drive.google.com/file/d/1P_Xhgnhvr3aUNUxeIHYwozu8bngotrHR/view?usp=sharing

Evaluation Questionnaire of the module "WM318 Sustainable Energy Systems"

For our study on the quality of the module "WM318 Sustainable Energy Systems" we ask you to complete this questionnaire in full. All data will be evaluated anonymously. For each statement please select only one of 5 options – Definitely Agree; Mostly Agree; Neither Agree nor Disagree; Mostly Disagree; or Definitely Disagree. There are no right and wrong answers.

	Statement	Definitely Agree	Mostly Agree	Neither Agree nor Disagree	Mostly Disagree	Definitely Disagree
<i>Please assess the following statements regarding acquisition of knowledge and skills:</i>						
1	Due to this module, I understand the basic definitions of the renewable energy systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Due to this module, I understand the fundamental problems in the field of sustainable energy systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Due to this module, I am able to choose the adequate methods to the problems of this field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	I am able to use basic theoretical knowledge and practical skills in the subject.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	I am able to analyse solutions and processes of the subject.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	I am able to argue and evaluate the given problems and solutions of the topic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	I am able to compare and find significant connections and correlations in the field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	I am able to formulate solutions using the methods, techniques and tools of the subject.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Please assess the following statements regarding acquisition of competences:</i>						
9	Due to this module it is easier for me to express my own opinions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Due to this module I make my verbal contributions in a more comprehensible language.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Due to this module it is easier for me to ask when I have not understood something.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	I participated in the work planning within the team during this module.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	I contributed to the assignment of tasks within the team during this module.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Due to this module I can better hold a presentation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 5	Due to this module I can better write technical texts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 6	Due to this module I can better critically question and evaluate new ideas/things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 7	Due to this module I can better think across technical and non-technical considerations, I can better see things from different perspectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 8	Due to this module I can work more systematically and logically, and can better collect, visualize and analyse information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 9	Due to this module I can better identify and develop new things at my workplace/in my own projects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 0	Due to this module I can better solve problems of different nature that I encounter at my workplace/in my own projects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 1	Due to this module I can better manage my future projects as well as projects at my workplace.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 2	Due to this module I can better find and apply information about methods, techniques and tools needed to solve an issue.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Please assess the following statements regarding the content and teaching process:</i>						
4 1	I am motivated to participate in this module.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 2	In this module I have been encouraged to develop my own learning skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 3	In this module the learning is easy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 4	I feel satisfied with this module.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 5	I would recommend this module to other students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 6	Alignment of the theoretical and practical parts of the module makes learning easier.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 3	The objectives are clear.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 4	The content is appropriate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 5	The content is interesting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26	The information in this module is appropriate for me / my company/workplace.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27	Staff are good at explaining things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28	Staff make the subject interesting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29	Staff are enthusiastic about what they taught.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30	The module is intellectually stimulating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31	I am happy with the pace of learning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38	The workload for this module was reasonable given my other study commitments.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Please assess the following statements regarding the settings:</i>						
32	The timetable worked efficiently.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33	The module was well organised and ran smoothly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34	I have been able to contact staff when I needed to.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35	I have received sufficient advice and support for the module.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36	The resources for this module are sufficient for my needs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37	Notes support the learning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38	I have been able to access resources when I needed to.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Please use this space to make any additional comments regarding the module:						
Teaching & Learning						
Organisation of the module						

Resources of the module	
Content of the module	
Any other comments	
Thank you for your participation!	

Evaluation Questionnaire of the module: For our study on the quality of the module we ask you to complete this questionnaire in full. All data will be evaluated anonymously. For each statement please select only one of 5 options There are no right and wrong answers.

https://drive.google.com/file/d/1P_Xhgnhvr3aUNUxeIH7wozu8bngotrHR/view?usp=sharing

The general form as above

The review form of the syllabuses

<https://drive.google.com/file/d/1NiXjfZGuQNQUUZ5WR4nbLxZrY6OkbfzM/view?usp=sharing>

This review form of the syllabus is developed in relation to the requirements of the Bologna Process, the development of key competences suggested by the EU quality control guidelines and the assumptions of the MACICT project and the specificity of education in a given BY Partner unit.

The competent reviewer should evaluate a syllabus on a Likert 5 point scale (the lowest level: 1; the highest level:5). The reviewer writes an opinion if there are met the requirements related to MACICT QA Guideline (SECTION1 and SECTION 2), and Project aim and content, thus:

Name of the syllabus

Is the course title and content in accordance with the teaching program?

Does the syllabus have a specific year of study/semester/group?

Does the course include Learning Objectives as:

Educational outcomes: knowledge, practical skills, social skills

Is there a specific program in the course description in relation to the number of planned lectures/ classes/ workshops/?

Have the teaching methods been specified?

Has the literature been specified?

Has the number of hours of the student's own work been specified?

Have the methods of verification of the assumed learning outcomes been specified?

Is the form of completing the individual components of the course specified?

Have the ECTS scores been specified properly?

Is the principle kept: one ECTS credit corresponds to 25 hours of the student's own work

Overall summary comments from the reviewer.

The review of the syllabus contains the reviewer contact to discuss eventual changes.

Reviewer:

Review of the syllabus

University:

.....

Name of the syllabus

.....

1. Is the course title and content in accordance with the teaching program?

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

2. Does the syllabus have a specific year of study / semester / group?

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

3. Does the course include Learning Objectives?

a) Yes/ No/ Partially

b) Write your comments, please.....

.....

3.1. Educational outcomes:

3.1.1. knowledge

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

3.2. 2. Practical skills

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

3.2.3. Social skills

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

4. Is there a specific program in the course description in relation to the number of planned lectures/ classes/ workshops/ ?

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

5. Have the teaching methods been specified?

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

6. Have the literature been specified?

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

7. Has the number of hours of the student's own work been specified?

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

8. Have the methods of verification of the assumed learning outcomes been specified?

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

9. Is the form of completing the individual components of the course specified?

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

Examples:

Student workload, form of student activity:

Average number of hours for the activity: ... hours

eg Laboratory: 30 hours 30 hours

Student's own work, e.g.:

Preparation for classes: ... hours

Elaboration of results: ... hours

Reading literature: ... hours

Report writing: ... hours

10. Have the ECTS scores been specified properly?

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

Please remember that one ECTS credit corresponds to 25 hours of the student's own work

Overall summary comments from the reviewer

.....

Teachers' Questions for Self-evaluation of the course design_BELL (1)

https://drive.google.com/file/d/1ycN8-5FUL_JHTFQw_poW_GsKcQHrLUuJ/view?usp=sharing

This document is a tool for teachers self-evaluation of the course design, designated for qualitative assurance. It contains such dimensions as Intended Learning Outcomes, Contextual Issues, Content Issues, Assessment, Teaching Methods & Tools, General Questions.

This questionnaire can support maintaining high quality of teachers competencies, evaluating a program, and a course.

Teachers....Questions for Self-evaluation of the course design

Questions on the course design
(proposed for using used during the session of inter-alliance groups in March 2020)

A. Intended Learning Outcomes

1. How well do my content and methods work to ensure that students can achieve the learning outcomes?
2. What learning outcomes outside of course content do I have (i.e., writing skills, presentation skills)?
3. Are my outcomes theory-based and/or skill-based?
4. Are the learning outcomes specific, attainable, and measurable?

B. Contextual Issues

1. Who are my students (i.e., age range, walk of life, interests, occupation, experience)?
2. What are the students' needs?
3. What are their expectations of this course? Of the teacher?
4. What are my students' goals? How can I incorporate them into the course content?
5. How can I respect the diverse abilities and needs of my students (i.e., language or cultural differences, or students who learn in different ways)?
6. What teaching methods are most likely to engage my students?

C. Content Issues

1. What resources do I use and where do I find them (i.e., journals, libraries, student bibliographies, online searches, etc.)?
2. How much reading or other types of activities do I assign outside of class?

D. Assessment

1. What assessment tools do I use (i.e., assignments, exams, projects, collaborative work, peer assessment)? Why?
2. What am I trying to accomplish by using these tools?
3. What do I want the students to get out of them?
4. Are they consistent with my beliefs about student learning?
5. How do my assessments help students learn the difficult concepts in my course?
6. How can I limit the possibility of plagiarism and cheating?
7. When does assessment fit into my course?
8. Is the workload reasonable, well timed, and sustainable for my students and me?
9. What can I learn about my students' learning from the assessment results? How do I analyse and use these results?

E. Teaching Methods & Tools

1. What methods do my students feel comfortable with?
2. What other methods would you might consider to use in this course?
3. What technical means (e.g. videos and audio materials, references to external e-resources, graphics, self-made films, photos, pictures, etc.) do I use in the course?
4. What methods help me to emphasise particularly important content and/or help students to understand particularly difficult content?

F. General Questions

1. What is there in the course that makes the course different from all other courses in the field?
2. What specifically peculiar things used in my course design could be used in the other 4 courses?
3. What can be done to improve the course?

The questionnaire – course evaluation by students_Appendix 1.docx
https://drive.google.com/file/d/1d9gSVLhOV_k6fZr0ZLxqiGGahj0Sx2tg/view?usp=sharing

For the MACICT study on the quality of each course or modul the BY Partner ask students to complete this questionnaire in full anonymously. For each statement are possible to select only one of 5 options – Definitely Agree; Mostly Agree; Neither Agree nor Disagree; Mostly Disagree; or Definitely Disagree. The questionnaire was elaborated according to evaluation scheme proposed by BY Partners.

Appendix 1. Dimensions and items of the questionnaire – course evaluation by students	Codes
EFFECTS OF TEACHING - KNOWLEDGE	EF
I know the methods and tools of the subject.	EF1
I have knowledge on techniques adequate to the subject.	EF2
I understand the fundamental problems of the subject.	EF3
I understand the basic definitions of the subject.	EF4
I have the feeling that I am able to compare and find significant associations in the field and I am able to formulate solutions using the methods of the subject.	EF5

I have the feeling that I am able to argue and evaluate the given problems and solutions of the topic self-evidently.	EF6
I am able to choose the adequate methods to the types of problems of this field.	EF7
SKILLS	SKILLS
I am able to use basic theoretical knowledge and practical skills in the subject.	Skill1
I can understand and analyze phenomena and processes on the basis of the methods of the course.	Skill2
I am able to use the knowledge and skill gained during the course to analyze proposed solutions of concrete problems and propose new solutions using methodology, techniques and tools of the course.	Skill3
I am able to introduce proposed solutions in similar projects.	Skill4
SOCIAL COMPETENCIES	SC
In my team the team members are able to properly formulate priorities that support the implementation and solving assumed tasks as a team.	SC1
In my team the team members elaborate in the group the algorithm of solving special tasks.	SC2
In my team the team members are able to cooperate and work in the group taking different roles during preparation and joining projects using methods, techniques and tools of the course.	SC3
In my team the team members are respectful to each other.	SC4
In my team the team members are helpful to each other.	SC5
I feel comfortable sharing my time with my team members.	SC6
In my team I can openly talk about critical topics.	SC7
I spend time with my team members also in my free time.	SC8
In my team we openly speak also about private topics.	SC9
After the project is over, I would like to have another project with my team.	SC10
EVALUATION OF THE COURSE	EC
Organization	
The course is well organized.	EC4
The course is well prepared.	EC5
The organization of the course in the classroom is optimal.	EC2
Teachers	
In this course the learning is easy.	EC1
In this course the knowledge is given in a clear, interactive and understandable way.	EC3
In this course the teachers are well prepared.	EC6
The way of teaching is clear.	EC7

The way of teaching is logical.	EC8
The way of teaching is well structured.	EC9
Motivation and satisfaction	
Generally, I feel satisfied with this course.	EC10
I would recommend this course to other students.	EC11
I have a feeling of learning new things that are important for my future.	EC12
I am motivated to participate in this course.	EC13
I think the course is useful.	EC14
I have the feeling that in this course I am learning faster than in other courses.	EC15
I think the course prepares me for my later job.	EC16
Individual development	
I think the course enables me to understand the subjects more clearly.	EC17
I think the course delivers me a good overview about the issues of the topic.	EC18
I think the course enlarges my horizon	EC19
I think the course improves my skills.	EC20
I think the course develops my knowledge	EC21
I think the course improves my knowledge	EC22
I think the course improves my social competencies.	EC23
Source: Own elaboration, adapted from (Maekioe-Marusik, Maekioe and Kowal, 2017)	

Record of Bellorussian teachers' reflections & analytical conclusions. Needs analysis of pedagogical approaches, methods of teaching/learning based on a survey conducted for the teaching staff of BY partner universities. Record of BY teachers' reflections & analytical conclusions (YKSUG: Lada Rudikova, Hanna Karkanitsa, Anna Deytseva)

Questionnaire

for assessing employer satisfaction with the quality of graduate training

Dear teacher!

We invite you to participate in a sociological survey whose goal is to improve the quality and training of young specialists - graduates of our university. Carefully read the questionnaire questions and suggested answers. Mark the number of the answer that

matches your opinion. If the proposed options do not correspond to your opinion, write your answer in the "other" column. For tabular type questions, give an answer on each line.

The questionnaire is anonymous; all data will be used in a generalized form.

Thanks in advance for your help!

1. Evaluate, on a 5-point scale, how much the following modern educational technologies correspond to the task of creating competencies that meet the needs of the labor market (5-fully correspond, 1-do not correspond)

Teaching and teaching methods	Rating				
Interactive teaching methods	5	4	3	2	1
Training video / multimedia training lesson	5	4	3	2	1
Workshops of representatives of business structures	5	4	3	2	1
Case method	5	4	3	2	1
Professional software products	5	4	3	2	1
Production and undergraduate practice	5	4	3	2	1
Innovative educational projects	5	4	3	2	1
Lectures	5	4	3	2	1
Business Project Development	5	4	3	2	1
Contest participation	5	4	3	2	1
Participation in various trainings, incl. business training	5	4	3	2	1
Performing creative tasks (essays, annotations, etc.)	5	4	3	2	1
Forms of students self-education work (projects, portfolio, online testing, etc.)	5	4	3	2	1
Development and protection of educational research projects	5	4	3	2	1

2. In what form are lecture classes organized in your discipline?

1. Traditional (chalk, blackboard)
2. Traditional using technical and multimedia tools
3. Mixed technologies (combining teacher-led learning with online learning)

3. What in your opinion should be modern lecture forms of teaching?

1. Broadcast training material
2. Be consultative in nature

4. Which of the following web services do you use in teaching subjects?

1. Social networks (attraction of additional educational information, discussion of educational issues)

2. Cloud resources (storage of training materials, monitoring the results of the of students self-education work)
3. Disciplinary e-learning resources
4. Educational portal
5. Not using
6. Other _____

5. Which of the following pedagogical approaches are most effective in training specialists (5 are the most effective, 1 are not effective):

Teaching trips	Rating				
Research approach (methods of scientific research, search and creative activity)	5	4	3	2	1
Value-based approach (the formation of values of the personality of the student)	5	4	3	2	1
Personally-oriented approach (individualization of the educational process)	5	4	3	2	1
Activity approach (independent search, analysis, generalization of information)	5	4	3	2	1
Competency-based approach (formation of competencies, motivation of students to take initiative, independence)	5	4	3	2	1
Systematic approach (the study of the sections of the course in their relationship)	5	4	3	2	1
Communicative approach (pair and group work)	5	4	3	2	1
Integrative approach (combining several activities and different development tools)	5	4	3	2	1
Game training (through game activity)	5	4	3	2	1
Project approach (project preparation)	5	4	3	2	1
The use of information and communication technologies (the use of multimedia resources and the media, searching the Internet , a virtual learning environment, etc.)	5	4	3	2	1
Of case stage (analysis of the situation or the case may be, the game business)	5	4	3	2	1
Developing training (the formation of cognitive independence, an active life position, for example, discussion)	5	4	3	2	1
Modular training (block-modular presentation of information - purpose, volume, level of assimilation)	5	4	3	2	1

Problematic training (the formation of a system of logical techniques, the application of knowledge in a new situation)	5	4	3	2	1
Individual training	5	4	3	2	1
6. Which of the following training elements can increase the level of entrepreneurial competencies (intentions) of students (undergraduates): <ol style="list-style-type: none"> 1. Organization of meetings and lectures with entrepreneurs 2. Implementing mentoring programs 3. Organization of seminars and round tables aimed at discussing the practical aspects of entrepreneurship 4. Creation of educational programs on entrepreneurship / implementation of individual courses 5. Communication with experts, entrepreneurs and other specialists 6. Competitions of business plans, coaching programs, etc. 7. Solving business cases, participating in business games aimed at creating students' creative thinking 8. Other _____ 					
7. What characteristics should a graduate student possessing entrepreneurial competencies possess: <ol style="list-style-type: none"> 1. To be able to see opportunities for activity and to know the labor market well 2. Follow the ethical principles of enterprises and entrepreneurs 3. Plan, organize, manage, delegate, analyze, evaluate, keep records 4. Represent the organization and negotiate 5. Work independently and in a team 6. Assess the situation, identify strengths and weaknesses, take risks 7. Take the initiative, act in advance 8. Motivate others and be motivated and decisive in achieving goals 9. Other _____ 					
8. To what extent do the study programs offered by the university help undergraduates master the following competencies? (5-completely help, 1-not help)					
Competencies	Rating				
Improvement in one's own field of knowledge and professional activity	5	4	3	2	1
Knowledge I have on other areas	5	4	3	2	1
Analytical thinking	5	4	3	2	1
The ability to understand complex problems in general	5	4	3	2	1
Ability to anticipate new challenges	5	4	3	2	1
Ability to acquire new knowledge	5	4	3	2	1

The ability to negotiate effectively	5	4	3	2	1
Ability to take decisive action in situations of uncertainty	5	4	3	2	1
Ability to work under pressure, stress resistance	5	4	3	2	1
The ability to adapt to change, flexibility	5	4	3	2	1
Open to new opportunities	5	4	3	2	1
Ability to plan, organize and coordinate activities	5	4	3	2	1
The ability to effectively distribute time, time management	5	4	3	2	1
The ability to work productively in a team	5	4	3	2	1
Ability to inspire others	5	4	3	2	1
Ability to communicate ideas easily	5	4	3	2	1
Ability to fulfill the duties of a leader	5	4	3	2	1
Ability to use information and communication technology	5	4	3	2	1
The ability to seek new ways and directions for applying existing knowledge	5	4	3	2	1
The ability to come up with new ideas and solutions	5	4	3	2	1
Willingness to challenge existing ideas	5	4	3	2	1
The ability to present a product, ideas or reports in public	5	4	3	2	1
Ability to create reports and information notes	5	4	3	2	1
Ability to communicate in a foreign language	5	4	3	2	1
9. What measures do you consider most effective to improve the quality of training of specialists?					
1. Updating curricula in accordance with the demands of the IT market 2. Providing students and young professionals with internship opportunities at leading IT companies 3. When practitioners are involved in the educational process 4. Improving the material and technical base of the university (does not correspond to the advanced technologies used in the real sector of the economy) 5. Conducting conferences, workshops, etc. 6. Granting students and young specialists grants for research, development 7. Attracting employers to the magistracy commission 8. Joint employer management of graduation projects 9. Attracting employers to the final assessment of graduate results, to assessing the quality of education at the university 10. Establishing links between the university and companies working in the IT industry 11. Invitation of practitioners to read special courses and seminars 12. Teacher workload reduction 13. Motivation of scientific activity of young scientists (dissertation defense) 14. Salary increase					

15. Other _____

10. What do you lack for training highly qualified specialists?

1. Knowledge I have of their discipline
2. The use of active teaching methods
3. Methods of teaching your discipline
4. Computer technology
5. Audience management techniques
6. Organizational skills
7. Innovative approaches to the organization of the educational process
8. Psychology
9. Interpersonal relationships
10. Knowledge of a foreign language
11. Self-organization
12. Foreign teaching experience
13. Sufficiently equipped libraries with textbooks and teaching aids
14. Other _____

11. In your opinion, what needs to be done to reduce the difference between labor market needs and university studies?

1. Indicate the university where you work

- Belarusian State University of informatics and radio electronics
- Brest State Technical University
- Gomel State Technical University
- Polotsk State University
- Yanka Kupala State University of Grodno
- Other _____

Science Degree:

1. Doctor of Science
2. PhD
3. Master of Science
4. I do not have a degree

Work experience at your university:

5. Up to 2 years
6. From 2 to 10 years
7. From 10 to 20 years

8.	More than 20 years
Gender:	
1.	Male
2.	Female
Age:	
1.	Up to 25 years
2.	26-35
3.	36-45
4.	46-55
5.	56 and more

Questionnaire for assessing employer satisfaction with the quality of graduate training for teacher

https://docs.google.com/document/d/1ru2UeT1kxWlp1_SrbSu84Ybub8drpetl/edit

Questionnaire for assessing the satisfaction of employers with the quality of education of graduate teachers. The authors conducted a sociological survey aimed at improving the quality and training of young specialists - YSUG graduates.

Questionnaire for assessing employer satisfaction with the quality of graduate training Dear teacher! We invite you to participate in a sociological survey whose goal is to improve the quality and training of young specialists - graduates of our university. Carefully read the questionnaire questions and suggested answers. Mark the number of the answer that matches your opinion. If the proposed options do not correspond to your opinion, write your answer in the "other" column. For tabular type questions, give an answer on each line. The questionnaire is anonymous; all data will be used in a generalized form. Thanks in advance for your help! 1. Evaluate, on a 5-point scale, how much the following modern educational technologies correspond to the task of creating competencies that meet the needs of the labor market (5-fully correspond, 1-do not correspond)					
Teaching and teaching methods	Rating				
Interactive teaching methods	5	4	3	2	1
Training video / multimedia training lesson	5	4	3	2	1

Workshops of representatives of business structures	5	4	3	2	1
Case method	5	4	3	2	1
Professional software products	5	4	3	2	1
Production and undergraduate practice	5	4	3	2	1
Innovative educational projects	5	4	3	2	1
Lectures	5	4	3	2	1
Business Project Development	5	4	3	2	1
Contest participation	5	4	3	2	1
Participation in various trainings, incl. business training	5	4	3	2	1
Performing creative tasks (essays, annotations, etc.)	5	4	3	2	1
Forms of students self-education work (projects, portfolio, online testing, etc.)	5	4	3	2	1
Development and protection of educational research projects	5	4	3	2	1
2. In what form are lecture classes organized in your discipline? <ol style="list-style-type: none"> 1. Traditional (chalk, blackboard) 2. Traditional using technical and multimedia tools 3. Mixed technologies (combining teacher-led learning with online learning) 					
3. What in your opinion should be modern lecture forms of teaching? <ol style="list-style-type: none"> 1. Broadcast training material 2. Be consultative in nature 					
4. Which of the following web services do you use in teaching subjects? <ol style="list-style-type: none"> 1. Social networks (attraction of additional educational information, discussion of educational issues) 2. Cloud resources (storage of training materials, monitoring the results of the of students self-education work) 3. Disciplinary e-learning resources 4. Educational portal 5. Not using 6. Other _____ 					
5. Which of the following pedagogical approaches are most effective in training specialists (5 are the most effective, 1 are not effective):					
Teaching trips	Rating				
Research approach (methods of scientific research, search and creative activity)	5	4	3	2	1

Value-based approach (the formation of values of the personality of the student)	5	4	3	2	1
Personally-oriented approach (individualization of the educational process)	5	4	3	2	1
Activity approach (independent search, analysis, generalization of information)	5	4	3	2	1
Competency-based approach (formation of competencies, motivation of students to take initiative, independence)	5	4	3	2	1
Systematic approach (the study of the sections of the course in their relationship)	5	4	3	2	1
Communicative approach (pair and group work)	5	4	3	2	1
Integrative approach (combining several activities and different development tools)	5	4	3	2	1
Game training (through game activity)	5	4	3	2	1
Project approach (project preparation)	5	4	3	2	1
The use of information and communication technologies (the use of multimedia resources and the media, searching the Internet , a virtual learning environment, etc.)	5	4	3	2	1
Of case stage (analysis of the situation or the case may be, the game business)	5	4	3	2	1
Developing training (the formation of cognitive independence, an active life position, for example, discussion)	5	4	3	2	1
Modular training (block-modular presentation of information - purpose, volume, level of assimilation)	5	4	3	2	1
Problematic training (the formation of a system of logical techniques, the application of knowledge in a new situation)	5	4	3	2	1
Individual training	5	4	3	2	1
6. Which of the following training elements can increase the level of entrepreneurial competencies (intentions) of students (undergraduates): <ol style="list-style-type: none"> 1. Organization of meetings and lectures with entrepreneurs 2. Implementing mentoring programs 3. Organization of seminars and round tables aimed at discussing the practical aspects of entrepreneurship 4. Creation of educational programs on entrepreneurship / implementation of individual courses 5. Communication with experts, entrepreneurs and other specialists 					

6. Competitions of business plans, coaching programs, etc.
7. Solving business cases, participating in business games aimed at creating students' creative thinking
8. Other _____ -

7. What characteristics should a graduate student possessing entrepreneurial competencies possess:

1. To be able to see opportunities for activity and to know the labor market well
2. Follow the ethical principles of enterprises and entrepreneurs
3. Plan, organize, manage, delegate, analyze, evaluate, keep records
4. Represent the organization and negotiate
5. Work independently and in a team
6. Assess the situation, identify strengths and weaknesses, take risks
7. Take the initiative, act in advance
8. Motivate others and be motivated and decisive in achieving goals
9. Other _____

8. To what extent do the study programs offered by the university help undergraduates master the following competencies? (5-completely help, 1-not help)

Competencies	Rating				
	5	4	3	2	1
Improvement in one's own field of knowledge and professional activity	5	4	3	2	1
Knowledge I have on other areas	5	4	3	2	1
Analytical thinking	5	4	3	2	1
The ability to understand complex problems in general	5	4	3	2	1
Ability to anticipate new challenges	5	4	3	2	1
Ability to acquire new knowledge	5	4	3	2	1
The ability to negotiate effectively	5	4	3	2	1
Ability to take decisive action in situations of uncertainty	5	4	3	2	1
Ability to work under pressure, stress resistance	5	4	3	2	1
The ability to adapt to change, flexibility	5	4	3	2	1
Open to new opportunities	5	4	3	2	1
Ability to plan, organize and coordinate activities	5	4	3	2	1
The ability to effectively distribute time, time management	5	4	3	2	1
The ability to work productively in a team	5	4	3	2	1
Ability to inspire others	5	4	3	2	1
Ability to communicate ideas easily	5	4	3	2	1
Ability to fulfill the duties of a leader	5	4	3	2	1
Ability to use information and communication	5	4	3	2	1

technology					
The ability to seek new ways and directions for applying existing knowledge	5	4	3	2	1
The ability to come up with new ideas and solutions	5	4	3	2	1
Willingness to challenge existing ideas	5	4	3	2	1
The ability to present a product, ideas or reports in public	5	4	3	2	1
Ability to create reports and information notes	5	4	3	2	1
Ability to communicate in a foreign language	5	4	3	2	1
<p>9. What measures do you consider most effective to improve the quality of training of specialists?</p> <ol style="list-style-type: none"> 1. Updating curricula in accordance with the demands of the IT market 2. Providing students and young professionals with internship opportunities at leading IT companies 3. When practitioners are involved in the educational process 4. Improving the material and technical base of the university (does not correspond to the advanced technologies used in the real sector of the economy) 5. Conducting conferences, workshops, etc. 6. Granting students and young specialists grants for research, development 7. Attracting employers to the magistracy commission 8. Joint employer management of graduation projects 9. Attracting employers to the final assessment of graduate results, to assessing the quality of education at the university 10. Establishing links between the university and companies working in the IT industry 11. Invitation of practitioners to read special courses and seminars 12. Teacher workload reduction 13. Motivation of scientific activity of young scientists (dissertation defense) 14. Salary increase 15. Other _____ 					
<p>10. What do you lack for training highly qualified specialists?</p> <ol style="list-style-type: none"> 1. Knowledge I have of their discipline 2. The use of active teaching methods 3. Methods of teaching your discipline 4. Computer technology 5. Audience management techniques 6. Organizational skills 7. Innovative approaches to the organization of the educational process 8. Psychology 9. Interpersonal relationships 					

10. Knowledge of a foreign language
11. Self-organization
12. Foreign teaching experience
13. Sufficiently equipped libraries with textbooks and teaching aids
14. Other _____

11. In your opinion, what needs to be done to reduce the difference between labor market needs and university studies?

1. Indicate the university where you work

- Belarusian State University
- Belarusian State University of informatics and radio electronics
- Belarusian National Technical University
- Brest State Technical University
- Gomel State Technical University
- Polotsk State University
- Yanka Kupala Grodno State University
- Other _____

Science Degree:

1. Doctor of Science
2. PhD
3. Master of Science
4. I do not have a degree

Work experience at your university:

5. Up to 2 years
6. From 2 to 10 years
7. From 10 to 20 years
8. More than 20 years

Gender:

1. Male
2. Female

Age:

1. Up to 25 years
2. 26-35
3. 36-45
4. 46-55

5. 56 and more

Review form for the deliverable

https://docs.google.com/document/d/1U-e-SRhtYSY_EXiWoFWWkAyZzghU_1u9/edit

This review form for the deliverable contains the checklist which supports Bellorussian Partners to prepare the report in accordance with the IMRAD (Introduction, Methodology, Results, Discussion) structure and goals of MACICT Project. Such kind of structure allows for a better evaluation and development of project novelty.

MACICT Review Form for the deliverable D... Updates in the curriculum

Criteria (evaluate from 1 (the lowest grade) to 5 (the highest grade)	Comment
1. RELEVANCE to MACICT Project and WP... Goals	
2. OBJECTIVES Clear and well described:	
3. Quality of WRITING Clear and Grammatically Correct:	
4. Deliverable well-ORGANIZED with logical flow of argument:	
5. LITERATURE REVIEW complete:	
6. METHODOLOGY: action research design, methods, instruments: Data analysis correct and appropriate:	
7. EVIDENCE supports author arguments and objectives:	
8. Report has a CONTRIBUTION to the project:	

1. What are the strengths of this deliverable?
2. How may this report be improved?
3. What are the key contributions of this report?
4. Please provide any additional comments or suggestions (i.e. references) that may assist the authors.
5. In the space below, please write your review for the author(s).

A detailed review of a manuscript is an invaluable aid to the author(s) in improving the overall technical quality, utility and readability of their paper. Please provide technically substantive comments that will help the author(s) to:

1. Correct errors and misconceptions;
2. State appropriate, accurate and relative conjectures and results;
3. Employ better definitions, diagrams, tables, graphs and examples;
4. Use a minimum of contemporary, relevant and essential references;
5. Make the article technically consistent and complete; and
6. Organize the material to help the reader understand the issues presented.

Suggested literature

1. Chava Frankfort-Nachmias; David Nachmias (1992). Research methods in the social sciences. New York : St. Martin's Press.
2. Wermann J, Kliesing N, Colombo A W, Cardoso Moraes E (2015): "Impact of new ICT trends for the educational curriculum in the area of Industrial Automation and engineering". In Proc. of the 41st Annual Conference of the Industrial Electronics Society (IECON 2015), pp. 3643-3648.
3. Juho Maekioe, S. Piashkun, Jolanta Kowal, M. Paasivaara, E. Surkova (2019). Fit for the future - Modernisation of Master Curriculum in ICT for Enhancing Student Employability in Belarus, EDULEARN. - Vol. 17 (2019), pp. 9116-9122. Available at <http://dx.doi.org/10.21125/edulearn.2019.2249>.
4. Mäkiö J, Mäkiö-Marusik E and Yablochnikov E (2016): "Task-centric holistic agile approach on teaching cyber physical systems engineering," IECON 2016-42nd Annual Conference of the IEEE, pp. 6608–6614.

5. Mäkiö-Marusik E, Mäkiö J and Kowal J (2017), "Implementation of Task-Centric Holistic Agile Approach on Teaching Cyber Physical Systems Engineering." In 23rd Americas Conference on Information Systems (AMCIS'17), Boston, 2017, At Boston, USA.
6. Kurki-Suonio K (2011): "Principles supporting the perceptual teaching of physics: A "practical teaching philosophy?," Science & Education, vol. 20, pp. 211–243.
7. Chun AHW (2004), "The agile teaching/learning methodology and its e-learning platform," International Conference on Web-Based Learning, Springer, pp. 11–18.

Quality Assurance hierarchy scheme and plan

<https://docs.google.com/document/d/1Wh7sSLv64T4LznYLwaZXg9v0wlnCM4pCaFElsWteK YA/edit#>

Quality assurance in the project will be exercised at two levels (see Figure 1):

(1) ensuring optimal quality of the project implementation through all of its phases – preparatory, developmental, pilot, follow-up, dissemination and exploitation, based on monitoring of the progress and evaluation of the achieved results; and

(2) ensuring high quality of the development of a methodology for assessing the activities carried out at the beginning and end of the course, to develop and adopt evaluation tools for the learning process, to assess the quality of education on the modernised MSc programme in ICT.

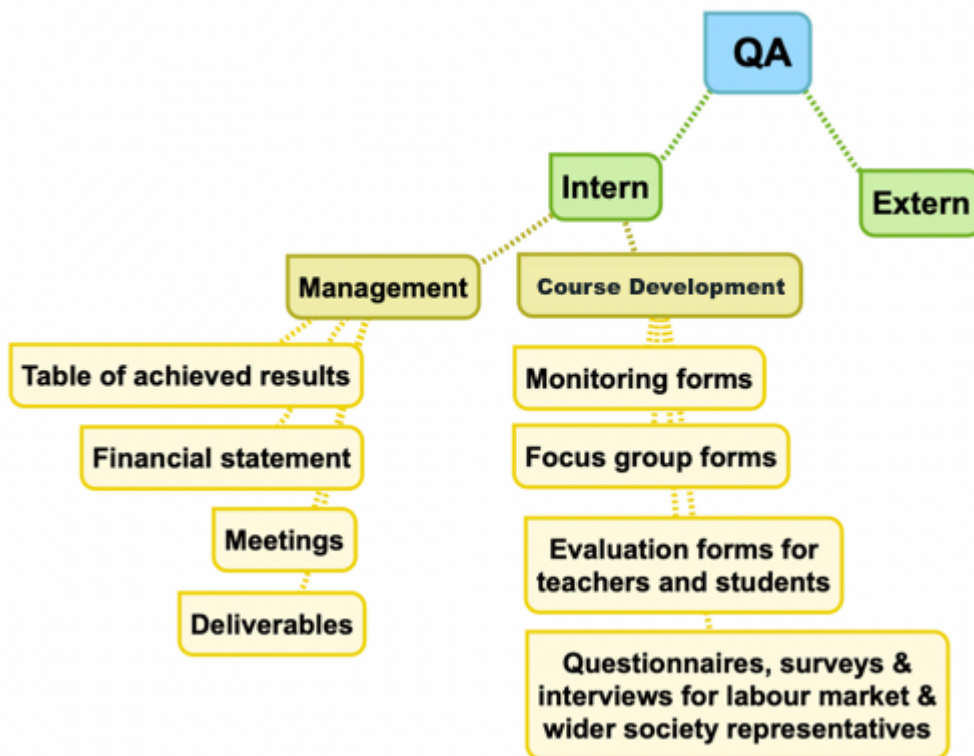


Figure 1: Quality Assurance hierarchy

After each project year one summarizing internal report will be prepared and delivered for check to external reviewers.

In the last, third year, an external reviewer will check the QA of the project 3 times.

Conclusions

All tools were developed in cooperation with BY Partners. They are used to strengthen and develop competences in the field of the so-called key competences in the context of the Bologna Process, especially in the field of knowledge, practical skills and social competences.

MACICT meetings evaluation form

<https://docs.google.com/document/d/1ZUEuL1jO4oqd6RLscQZjokcusOnQ5SAx/edit>

21. Course evaluation scheme:

<https://drive.google.com/file/d/1ShqTUNKyirjujDVd49m2wQtY-hr7T4OD/view?usp=sharing>

22. Review form of the syllabuses:

<https://drive.google.com/file/d/1NiXjfZGuQNQUUZ5WR4nbLxZrY6OkbfzM/view?usp=sharing>

23. Teachers....Questions for Self-evaluation of the course design_BELL (1)

https://drive.google.com/file/d/1ycN8-5FUL_JHTFQw_poW_GsKcQHrLUuJ/view?usp=sharing

24. The questionnaire – course evaluation by students_Appendix 1.docx

https://drive.google.com/file/d/1d9gSVLhOV_k6fZr0ZLxqiGGahj0Sx2tg/view?usp=sharing

25. D1.1 Record of BY teachers' reflections & analytical conclusions (YKSUG: Lada Rudikova, Hanna Karkanitsa, Anna Deytseva)

https://docs.google.com/document/d/1qsNZdvO5iqoNtr9Jt9G1qLL3CtybVpJ3GCPjq1X_Ol8/edit?usp=sharing

26. D1.2 Annex 1. Questionnaire for assessing employer satisfaction with the quality of graduate training for employer

<https://docs.google.com/document/d/1TVu-ePxnADeMZWixfgrz17Md2jfgazgV/edit?usp=sharing&oid=111077442654891082326&rtpof=true&sd=true>

27. D1.2 Annex 1. Questionnaire for assessing employer satisfaction with the quality of graduate training

https://docs.google.com/document/d/1ru2UeT1kxWlp1_SrbSu84Ybub8drpetl/edit?usp=sharing&oid=111077442654891082326&rtpof=true&sd=true

28. MACICT Review form for the deliverable:
https://docs.google.com/document/d/1U-e-SRhtYSY_EXiWoFWWkAyZzghU_1u9/edit?usp=sharing&oid=111077442654891082326&rtpof=true&sd=true

12. Quality Assurance hierarchy scheme and plan.
<https://docs.google.com/document/d/1Wh7sSLv64T4LznYLwaZXg9v0wlnCM4pCaFElsWteKYA/edit?usp=sharing>

2. MACICT MEETINGS EVALUATION FORM

This document evaluates different forms of meetings. BY Partners comments enable the MACICT Project Partners to better plan and execute future the MACICT meetings and tailor the meetings to meet BY Partners needs.

The results of the research on the basis of the questionnaire allow to determine the reasons and satisfaction with participation, in relation to the content, network, personal development, speakers, the most favorable aspect of the meeting, the registration process, place, discussion, competence development, project knowledge, communication competences between project partners. The results make it possible to establish and refine the plan and program of the next meetings and to encourage the participation of partners.

We invite you to fill out the form:

MACICT MEETING

Thank you for taking the time to participate in the MACICT MEETING evaluation. Your comments will enable us to better plan and execute future the MACICT meetings and tailor the meetings to meet your needs.

Sincerely,
MACICT TEAM

Did the MACICT meeting fulfill your reason for attending?

Yes -- Absolutely

Yes -- But not to my full extent

No

Other:

Please specify the main reason for attending this MACICT meeting:

Content
Networking
Personal Growth & Development
Speakers
Other:

Did the MACICT meeting fulfill your reason for attending?

Yes -- Absolutely
Yes -- But not to my full extent
No
Other:

Overall, were you satisfied with the MACICT meeting? What was the most beneficial aspect of the MACICT meeting?

Very Dissatisfied 1 2 3 4 5 Very Satisfied

How likely do you plan to attend the MACICT meeting next time?

Will Not Attend 1 2 3 4 5 Extremely Likely

Please indicate your overall satisfaction with this MACICT meeting content

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Please indicate your overall satisfaction with this MACICT meeting organization (registration process, venue)

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Please indicate your overall satisfaction with this MACICT meeting discussion

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Please indicate your overall satisfaction on your competencies development during this MACICT meeting

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Please indicate your overall satisfaction on your project knowledge development during this MACICT meeting

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Please indicate your overall satisfaction on your project organizational skills development during this MACICT meeting

Very Dissatisfied 1 2 3 4 5 Very Satisfied

Please indicate your overall satisfaction on your communication competences between partners development during this MACICT meeting
Very Dissatisfied 1 2 3 4 5 Very Satisfied

Which topics would you be interested to learn more about at the next year's MACICT meeting?

.....

Please share any Other feedback you have about the MACICT meeting and how we can improve it or the meetings that you would like to see explored next year:

Send please

Course evaluation scheme

<https://drive.google.com/file/d/1ShqTUNKyirjujDVd49m2wQtY-hr7T4OD/view?usp=sharing>

The fulfilment of the first two objectives (1a and 1b) will ask for a change

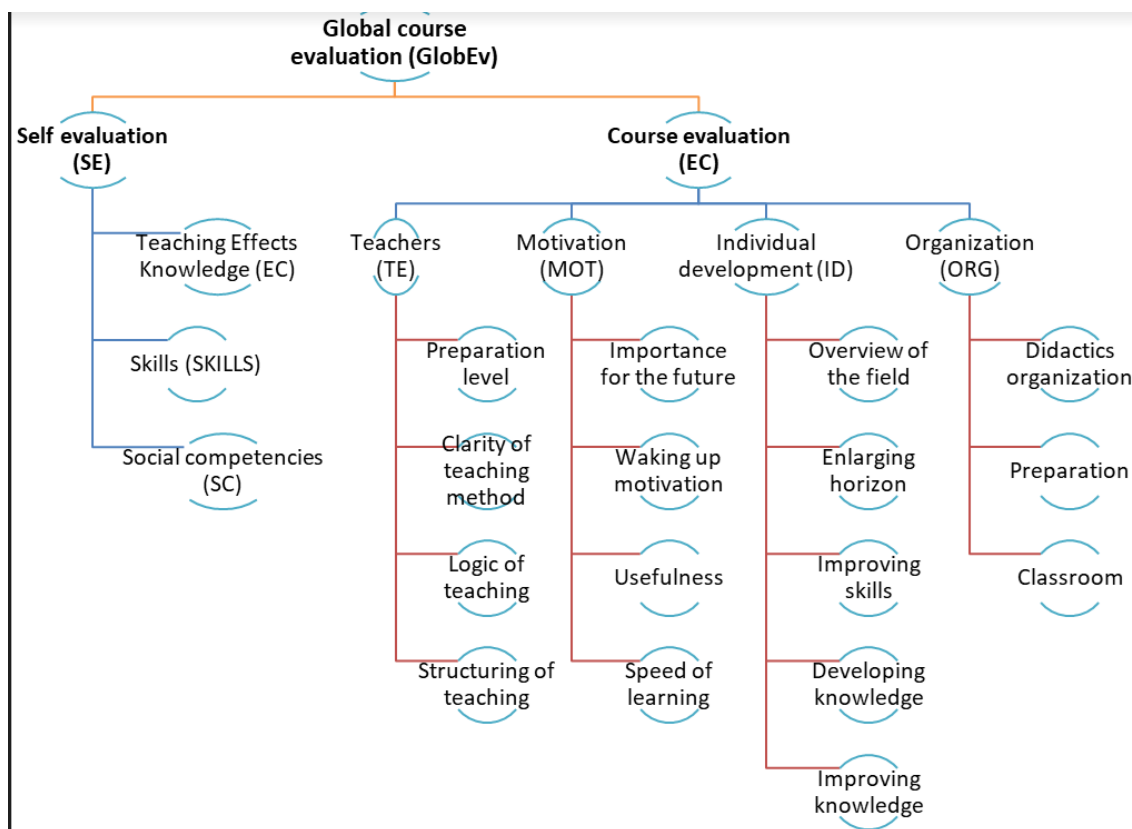
- in pedagogical attitudes, approaches and methods of education in Belorussian teachers,
- in students' mindsets and their adaptability to society and market, and
- on the labour market where graduates from the modernised interdisciplinary MSc study programme in ICT will get better possibilities of employment.

As a further result of the project will be that some of the graduates will be able to start their own business.

The 3rd and 4th objectives will enhance the quality of the programme and bring it closer to the demands of the labour market and society.

The last 3 objectives will allow implementation of the modernised MSc study programme and its quality control, improvements and optimization of the programme, and enhance the international dimension of the programme. We assume global evaluation of proposed methods depicted on the scheme depicted in Fig. 1, according to Maekioe et al. (2019).

Figure 1. Scheme of course evaluation



For the MACICT study on the quality of the module “WM318 Sustainable Energy Systems” the Bellorussian Partner asked students to complete this questionnaire in full anonymously. For each statement are possible to select only one of 5 options – Definitely Agree; Mostly Agree; Neither Agree nor Disagree; Mostly Disagree; or Definitely Disagree. The questionnaire was elaborated according to the evaluation scheme proposed by BY Partners.

https://drive.google.com/file/d/1P_Xhgnhvr3aUNUxeIHYwozu8bngotrHR/view?usp=sharing

Evaluation Questionnaire of the module “WM318 Sustainable Energy Systems”

For our study on the quality of the module "WM318 Sustainable Energy Systems" we ask you to complete this questionnaire in full. All data will be evaluated anonymously. For each statement please select only one of 5 options – Definitely Agree; Mostly Agree; Neither Agree nor Disagree; Mostly Disagree; or Definitely Disagree. There are no right and wrong answers.

	Statement	Definitely Agree	Mostly Agree	Neither Agree nor Disagree	Mostly Disagree	Definitely Disagree
<i>Please assess the following statements regarding acquisition of knowledge and skills:</i>						
1	Due to this module, I understand the basic definitions of the renewable energy systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Due to this module, I understand the fundamental problems in the field of sustainable energy systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Due to this module, I am able to choose the adequate methods to the problems of this field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	I am able to use basic theoretical knowledge and practical skills in the subject.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	I am able to analyse solutions and processes of the subject.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	I am able to argue and evaluate the given problems and solutions of the topic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	I am able to compare and find significant connections and correlations in the field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	I am able to formulate solutions using the methods, techniques and tools of the subject.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Please assess the following statements regarding acquisition of competences:</i>						
9	Due to this module it is easier for me to express my own opinions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Due to this module I make my verbal contributions in more comprehensible language.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Due to this module it is easier for me to ask when I have not understood something.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	I participated in the work planning within the team during this module.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	I contributed to the assignment of tasks within the team during this module.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Due to this module I can better hold a presentation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15	Due to this module I can better write technical texts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Due to this module I can better critically question and evaluate new ideas/things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	Due to this module I can better think across technical and non-technical considerations, I can better see things from different perspectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	Due to this module I can work more systematically and logically, can better collect, visualize and analyse information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	Due to this module I can better identify and develop new things at my workplace/in my own projects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	Due to this module I can better solve problems of different nature that I encounter at my workplace/in my own projects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	Due to this module I can better manage my future projects as well as projects at my workplace.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	Due to this module I can better find and apply information about methods, techniques and tools needed to solve an issue.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Please assess the following statements regarding the content and teaching process:</i>						
41	I am motivated to participate in this module.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42	In this module I have been encouraged to develop my own learning skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43	In this module the learning is easy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44	I feel satisfied with this module.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45	I would recommend this module to other students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46	Alignment of the theoretical and practical parts of the module makes learning easier.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23	The objectives are clear.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24	The content is appropriate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25	The content is interesting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26	The information in this module is appropriate for me / my company/workplace.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27	Staff are good at explaining things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28	Staff make the subject interesting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29	Staff are enthusiastic about what they taught.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30	The module is intellectually stimulating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31	I am happy with the pace of learning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38	The workload for this module was reasonable given my other study commitments.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Please assess the following statements regarding the settings:</i>						
32	The timetable worked efficiently.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33	The module was well organised and ran smoothly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34	I have been able to contact staff when I needed to.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35	I have received sufficient advice and support for the module.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36	The resources for this module are sufficient for my needs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37	Notes support the learning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38	I have been able to access resources when I needed to.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Please use this space to make any additional comments regarding the module:						
Teaching & Learning						
Organisation of the module						

Resources of the module	
Content of the module	
Any other comments	
Thank you for your participation!	

Evaluation Questionnaire of the module: For our study on the quality of the module we ask you to complete this questionnaire in full. All data will be evaluated anonymously. For each statement please select only one of 5 options There are no right and wrong answers.

https://drive.google.com/file/d/1P_Xhgnhvr3aUNUxeIH7wozu8bngotrHR/view?usp=sharing

The general form as above

The review form of the syllabuses

<https://drive.google.com/file/d/1NiXjfZGuQNQUUZ5WR4nbLxZrY6OkbfzM/view?usp=sharing>

This review form of the syllabus is developed in relation to the requirements of the Bologna Process, the development of key competences suggested by the EU quality control guidelines and the assumptions of the MACICT project and the specificity of education in a given BY Partner unit.

The competent reviewer should evaluate a syllabus on a Likert 5 point scale (the lowest level: 1; the highest level:5). The reviewer writes an opinion if there are met the requirements related to MACICT QA Guideline (SECTION1 and SECTION 2), and Project aim and content, thus:

Name of the syllabus

Is the course title and content in accordance with the teaching program?

Does the syllabus have a specific year of study/semester/group?

Does the course include Learning Objectives as:

Educational outcomes: knowledge, practical skills, social skills

Is there a specific program in the course description in relation to the number of planned lectures/ classes/ workshops/?

Have the teaching methods been specified?

Has the literature been specified?

Has the number of hours of the student's own work been specified?

Have the methods of verification of the assumed learning outcomes been specified?

Is the form of completing the individual components of the course specified?

Have the ECTS scores been specified properly?

Is the principle kept: one ECTS credit corresponds to 25 hours of the student's own work

Overall summary comments from the reviewer.

The review of the syllabus contains the reviewer contact to discuss eventual changes.

Reviewer:

Review of the syllabus

University:

.....

Name of the syllabus

.....

4. Is the course title and content in accordance with teaching program?

c) Yes/ No/ Partially

d) If no, write a suggestion please:

.....

5. Does the syllabus have a specific year of study / semester / group?

c) Yes/ No/ Partially

d) If no, write a suggestion please:

.....

6. Does the course include Learning Objectives?

c) Yes/ No/ Partially

d) Write your comments, please.....

.....

6.1. Educational outcomes:

6.1.1. knowledge

c) Yes/ No/ Partially

d) If no, write a suggestion please:

.....

6.2. 2. Practical skills

c) Yes/ No/ Partially

d) If no, write a suggestion please:

.....

10.2.3. Social skills

c) Yes/ No/ Partially

d) If no, write a suggestion please:

.....

11. Is there a specific program in the course description in relation to the number of planned lectures/ classes/ workshops/ ?

c) Yes/ No/ Partially

d) If no, write a suggestion please:

.....

12. Have the teaching methods been specified?

c) Yes/ No/ Partially

d) If no, write a suggestion please:

.....

13. Have the literature been specified?

c) Yes/ No/ Partially

d) If no, write a suggestion please:

.....

14. Has the number of hours of the student's own work been specified?

c) Yes/ No/ Partially

d) If no, write a suggestion please:

.....

15. Have the methods of verification of the assumed learning outcomes been specified?

c) Yes/ No/ Partially

d) If no, write a suggestion please:

.....

16. Is the form of completing the individual components of the course specified?

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

Examples:

Student workload, form of student activity:

Average number of hours for the activity: ... hours

eg Laboratory: 30 hours 30 hours

Student's own work, e.g.:

Preparation for classes: ... hours

Elaboration of results: ... hours

Reading literature: ... hours

Report writing: ... hours

17. Have the ECTS scores been specified properly?

c) Yes/ No/ Partially

d) If no, write a suggestion please:

.....

Please remember that one ECTS credit corresponds to 25 hours of the student's own work

Overall summary comments from the reviewer

.....

Teachers' Questions for Self-evaluation of the course design_BELL (1)

https://drive.google.com/file/d/1ycN8-5FUL_JHTFQw_poW_GsKcQHrLUuJ/view?usp=sharing

This document is a tool for teachers self-evaluation of the course design, designated for qualitative assurance. It contains such dimensions as Intended Learning Outcomes, Contextual Issues, Content Issues, Assessment, Teaching Methods & Tools, General Questions.

This questionnaire can support maintaining high quality of teachers competencies, evaluating a program, and a course.

Teachers....Questions for Self-evaluation of the course design

Questions on the course design
(proposed for using used during the session of inter-alliance groups in March 2020)

A. Intended Learning Outcomes

1. How well do my content and methods work to ensure that students can achieve the learning outcomes?
2. What learning outcomes outside of course content do I have (i.e., writing skills, presentation skills)?
3. Are my outcomes theory-based and/or skill-based?
4. Are the learning outcomes specific, attainable, and measurable?

B. Contextual Issues

1. Who are my students (i.e., age range, walk of life, interests, occupation, experience)?
2. What are the students' needs?
3. What are their expectations of this course? Of the teacher?
4. What are my students' goals? How can I incorporate them into the course content?
5. How can I respect the diverse abilities and needs of my students (i.e., language or cultural differences, or students who learn in different ways)?
6. What teaching methods are most likely to engage my students?

C. Content Issues

1. What resources do I use and where do I find them (i.e., journals, libraries, student bibliographies, online searches, etc.)?
2. How much reading or other types of activities do I assign outside of class?

D. Assessment

1. What assessment tools do I use (i.e., assignments, exams, projects, collaborative work, peer assessment)? Why?
2. What am I trying to accomplish by using these tools?
3. What do I want the students to get out of them?
4. Are they consistent with my beliefs about student learning?
5. How do my assessments help students learn the difficult concepts in my course?
6. How can I limit the possibility of plagiarism and cheating?
7. When does assessment fit into my course?
8. Is the workload reasonable, well timed, and sustainable for my students and me?
9. What can I learn about my students' learning from the assessment results? How do I analyse and use these results?

E. Teaching Methods & Tools

1. What methods do my students feel comfortable with?
2. What other methods would you might consider to use in this course?
3. What technical means (e.g. videos and audio materials, references to external e-resources, graphics, self-made films, photos, pictures, etc.) do I use in the course?
4. What methods help me to emphasise particularly important content and/or help students to understand particularly difficult content?

F. General Questions

1. What is there in the course that makes the course different from all other courses in the field?
2. What specifically peculiar things used in my course design could be used in the other 4 courses?
3. What can be done to improve the course?

The questionnaire – course evaluation by students_Appendix 1.docx

https://drive.google.com/file/d/1d9gSVLhOV_k6fZr0ZLxqiGGahj0Sx2tg/view?usp=sharing

For the MACICT study on the quality of each course or modul the BY Partner ask students to complete this questionnaire in full anonymously. For each statement are possible to select only one of 5 options – Definitely Agree; Mostly Agree; Neither Agree nor Disagree; Mostly Disagree; or Definitely Disagree. The questionnaire was elaborated according to evaluation scheme proposed by BY Partners.

Appendix 1. Dimensions and items of the questionnaire – course evaluation by students	Codes
EFFECTS OF TEACHING - KNOWLEDGE	EF
I know the methods and tools of the subject.	EF1
I have knowledge on techniques adequate to the subject.	EF2
I understand the fundamental problems of the subject.	EF3
I understand the basic definitions of the subject.	EF4
I have the feeling that I am able to compare and find significant associations in the field and I am able to formulate solutions using the methods of the subject.	EF5

I have the feeling that I am able to argue and evaluate the given problems and solutions of the topic self-evidently.	EF6
I am able to choose the adequate methods to the types of problems of this field.	EF7
SKILLS	SKILLS
I am able to use basic theoretical knowledge and practical skills in the subject.	Skill1
I can understand and analyze phenomena and processes on the basis of the methods of the course.	Skill2
I am able to use the knowledge and skill gained during to analyze proposed solutions of concrete problems and propose new solutions using methodology, techniques and tools of the course.	Skill3
I am able to introduce proposed solutions in similar projects.	Skill4
SOCIAL COMPETENCIES	SC
In my team the team members are able to properly formulate priorities that support the implementation and solving assumed tasks as a team.	SC1
In my team the team members elaborate in the group the algorithm of solving special tasks.	SC2
In my team the team members are able to cooperate and work in the group taking different roles during preparation joined projects using methods, techniques and tools of the course.	SC3
In my team the team members are respectful to each other.	SC4
In my team the team members are helpful to each other.	SC5
I feel comfortable sharing my time with my team members.	SC6
In my team I can openly talk about critical topics.	SC7
I spend time with my team members also in my free time.	SC8
In my team we openly speak also about private topics.	SC9
After the project is over, I would like to have another project with my team.	SC10
EVALUATION OF THE COURSE	EC
Organization	
The course is well organized.	EC4
The course is well prepared.	EC5
The organization of the course in the classroom is optimal.	EC2
Teachers	
In this course the learning is easy.	EC1
In this course the knowledge is given in a clear, interactive and understandable way.	EC3
In this course the teachers are well prepared.	EC6
The way of teaching is clear.	EC7

The way of teaching is logical.	EC8
The way of teaching is well structured.	EC9
Motivation and satisfaction	
Generally, I feel satisfied with this course.	EC10
I would recommend this course to other students.	EC11
I have a feeling of learning new things that are important for my future.	EC12
I am motivated to participate in this course.	EC13
I think the course is useful.	EC14
I have the feeling that in this course I am learning faster than in other courses.	EC15
I think the course prepares me for my later job.	EC16
Individual development	
I think the course enables me to understand the subjects more clearly.	EC17
I think the course delivers me a good overview about the issues of the topic.	EC18
I think the course enlarges my horizon	EC19
I think the course improves my skills.	EC20
I think the course develops my knowledge	EC21
I think the course improves my knowledge	EC22
I think the course improves my social competencies.	EC23
Source: Own elaboration, adapted from (Maekioe-Marusik, Maekioe and Kowal, 2017)	

Record of Bellorussian teachers' reflections & analytical conclusions. Needs analysis of pedagogical approaches, methods of teaching/learning based on a survey conducted for the teaching staff of BY partner universities. Record of BY teachers' reflections & analytical conclusions (YKSUG: Lada Rudikova, Hanna Karkanitsa, Anna Deytseva)

Questionnaire

for assessing employer satisfaction with the quality of graduate training

Dear teacher!

We invite you to participate in a sociological survey whose goal is to improve the quality and training of young specialists - graduates of our university. Carefully read the questionnaire questions and suggested answers. Mark the number of the answer that

matches your opinion. If the proposed options do not correspond to your opinion, write your answer in the "other" column. For tabular type questions, give an answer on each line.

The questionnaire is anonymous; all data will be used in a generalized form.

Thanks in advance for your help!

1. Evaluate, on a 5-point scale, how much the following modern educational technologies correspond to the task of creating competencies that meet the needs of the labor market (5-fully correspond, 1-do not correspond)

Teaching and teaching methods	Rating				
	5	4	3	2	1
Interactive teaching methods	5	4	3	2	1
Training video / multimedia training lesson	5	4	3	2	1
Workshops of representatives of business structures	5	4	3	2	1
Case method	5	4	3	2	1
Professional software products	5	4	3	2	1
Production and undergraduate practice	5	4	3	2	1
Innovative educational projects	5	4	3	2	1
Lectures	5	4	3	2	1
Business Project Development	5	4	3	2	1
Contest participation	5	4	3	2	1
Participation in various trainings, incl. business training	5	4	3	2	1
Performing creative tasks (essays, annotations, etc.)	5	4	3	2	1
Forms of students self-education work (projects, portfolio, online testing, etc.)	5	4	3	2	1
Development and protection of educational research projects	5	4	3	2	1

2. In what form are lecture classes organized in your discipline?

4. Traditional (chalk, blackboard)
5. Traditional using technical and multimedia tools
6. Mixed technologies (combining teacher-led learning with online learning)

3. What in your opinion should be modern lecture forms of teaching?

3. Broadcast training material
4. Be consultative in nature

4. Which of the following web services do you use in teaching subjects?

7. Social networks (attraction of additional educational information, discussion of educational issues)

8. Cloud resources (storage of training materials, monitoring the results of the of students self-education work)
9. Disciplinary e-learning resources
10. Educational portal
11. Not using
12. Other _____

5. Which of the following pedagogical approaches are most effective in training specialists (5 are the most effective, 1 are not effective):

Teaching trips	Rating				
Research approach (methods of scientific research, search and creative activity)	5	4	3	2	1
Value-based approach (the formation of values of the personality of the student)	5	4	3	2	1
Personally-oriented approach (individualization of the educational process)	5	4	3	2	1
Activity approach (independent search, analysis, generalization of information)	5	4	3	2	1
Competency-based approach (formation of competencies, motivation of students to take initiative, independence)	5	4	3	2	1
Systematic approach (the study of the sections of the course in their relationship)	5	4	3	2	1
Communicative approach (pair and group work)	5	4	3	2	1
Integrative approach (combining several activities and different development tools)	5	4	3	2	1
Game training (through game activity)	5	4	3	2	1
Project approach (project preparation)	5	4	3	2	1
The use of information and communication technologies (the use of multimedia resources and the media, searching the Internet , a virtual learning environment, etc.)	5	4	3	2	1
Of case stage (analysis of the situation or the case may be, the game business)	5	4	3	2	1
Developing training (the formation of cognitive independence, an active life position, for example, discussion)	5	4	3	2	1
Modular training (block-modular presentation of information - purpose, volume, level of assimilation)	5	4	3	2	1

Problematic training (the formation of a system of logical techniques, the application of knowledge in a new situation)	5	4	3	2	1
Individual training	5	4	3	2	1
6. Which of the following training elements can increase the level of entrepreneurial competencies (intentions) of students (undergraduates):					
9. Organization of meetings and lectures with entrepreneurs 10. Implementing mentoring programs 11. Organization of seminars and round tables aimed at discussing the practical aspects of entrepreneurship 12. Creation of educational programs on entrepreneurship / implementation of individual courses 13. Communication with experts, entrepreneurs and other specialists 14. Competitions of business plans, coaching programs, etc. 15. Solving business cases, participating in business games aimed at creating students' creative thinking 16. Other _____					
7. What characteristics should a graduate student possessing entrepreneurial competencies possess:					
10. To be able to see opportunities for activity and to know the labor market well 11. Follow the ethical principles of enterprises and entrepreneurs 12. Plan, organize, manage, delegate, analyze, evaluate, keep records 13. Represent the organization and negotiate 14. Work independently and in a team 15. Assess the situation, identify strengths and weaknesses, take risks 16. Take the initiative, act in advance 17. Motivate others and be motivated and decisive in achieving goals 18. Other _____					
8. To what extent do the study programs offered by the university help undergraduates master the following competencies? (5-completely help, 1-not help)					
Competencies	Rating				
Improvement in one's own field of knowledge and professional activity	5	4	3	2	1
Knowledge I have on other areas	5	4	3	2	1
Analytical thinking	5	4	3	2	1
The ability to understand complex problems in general	5	4	3	2	1
Ability to anticipate new challenges	5	4	3	2	1
Ability to acquire new knowledge	5	4	3	2	1

The ability to negotiate effectively	5	4	3	2	1
Ability to take decisive action in situations of uncertainty	5	4	3	2	1
Ability to work under pressure, stress resistance	5	4	3	2	1
The ability to adapt to change, flexibility	5	4	3	2	1
Open to new opportunities	5	4	3	2	1
Ability to plan, organize and coordinate activities	5	4	3	2	1
The ability to effectively distribute time, time management	5	4	3	2	1
The ability to work productively in a team	5	4	3	2	1
Ability to inspire others	5	4	3	2	1
Ability to communicate ideas easily	5	4	3	2	1
Ability to fulfill the duties of a leader	5	4	3	2	1
Ability to use information and communication technology	5	4	3	2	1
The ability to seek new ways and directions for applying existing knowledge	5	4	3	2	1
The ability to come up with new ideas and solutions	5	4	3	2	1
Willingness to challenge existing ideas	5	4	3	2	1
The ability to present a product, ideas or reports in public	5	4	3	2	1
Ability to create reports and information notes	5	4	3	2	1
Ability to communicate in a foreign language	5	4	3	2	1
9. What measures do you consider most effective to improve the quality of training of specialists?					
16. Updating curricula in accordance with the demands of the IT market					
17. Providing students and young professionals with internship opportunities at leading IT companies					
18. When practitioners are involved in the educational process					
19. Improving the material and technical base of the university (does not correspond to the advanced technologies used in the real sector of the economy)					
20. Conducting conferences, workshops, etc.					
21. Granting students and young specialists grants for research, development					
22. Attracting employers to the magistracy commission					
23. Joint employer management of graduation projects					
24. Attracting employers to the final assessment of graduate results, to assessing the quality of education at the university					
25. Establishing links between the university and companies working in the IT industry					
26. Invitation of practitioners to read special courses and seminars					
27. Teacher workload reduction					
28. Motivation of scientific activity of young scientists (dissertation defense)					
29. Salary increase					

30. Other _____

10. What do you lack for training highly qualified specialists?

15. Knowledge I have of their discipline
16. The use of active teaching methods
17. Methods of teaching your discipline
18. Computer technology
19. Audience management techniques
20. Organizational skills
21. Innovative approaches to the organization of the educational process
22. Psychology
23. Interpersonal relationships
24. Knowledge of a foreign language
25. Self-organization
26. Foreign teaching experience
27. Sufficiently equipped libraries with textbooks and teaching aids
28. Other _____

11. In your opinion, what needs to be done to reduce the difference between labor market needs and university studies?

2. Indicate the university where you work

- Belarusian State University
- Belarusian State University of informatics and radio electronics
- Belarusian National Technical University
- Brest State Technical University
- Gomel State Technical University
- Polotsk State University
- Yanka Kupala Grodno State University
- Other _____

Science Degree:

9. Doctor of Science
10. PhD
11. Master of Science
12. I do not have a degree

Work experience at your university:

13. Up to 2 years

14.	From 2 to 10 years
15.	From 10 to 20 years
16.	More than 20 years
Gender:	
3.	Male
4.	Female
Age:	
6.	Up to 25 years
7.	26-35
8.	36-45
9.	46-55
10.	56 and more

Questionnaire for assessing employer satisfaction with the quality of graduate training for teacher

https://docs.google.com/document/d/1ru2UeT1kxWlp1_SrbSu84Ybub8drpetl/edit

Questionnaire for assessing the satisfaction of employers with the quality of education of graduate teachers. The authors conducted a sociological survey aimed at improving the quality and training of young specialists - YSUG graduates.

<p>Questionnaire</p> <p>for assessing employer satisfaction with the quality of graduate training</p> <p>Dear teacher!</p> <p>We invite you to participate in a sociological survey whose goal is to improve the quality and training of young specialists - graduates of our university. Carefully read the questionnaire questions and suggested answers. Mark the number of the answer that matches your opinion. If the proposed options do not correspond to your opinion, write your answer in the "other" column. For tabular type questions, give an answer on each line.</p> <p>The questionnaire is anonymous; all data will be used in a generalized form.</p> <p>Thanks in advance for your help!</p> <p>1. Evaluate, on a 5-point scale, how much the following modern educational technologies correspond to the task of creating competencies that meet the needs of the labor market (5-fully correspond, 1-do not correspond)</p>	
Teaching and teaching methods	Rating

Interactive teaching methods	5	4	3	2	1
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Case method	5	4	3	2	1
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Production and undergraduate practice	5	4	3	2	1
Innovative educational projects	5	4	3	2	1
Lectures	5	4	3	2	1
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Participation in various trainings, incl. business training	5	4	3	2	1
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Forms of students self-education work (projects, portfolio, online testing, etc.)	5	4	3	2	1
Development and protection of educational research projects	5	4	3	2	1
2. In what form are lecture classes organized in your discipline? <ol style="list-style-type: none"> 4. Traditional (chalk, blackboard) 5. Traditional using technical and multimedia tools 6. Mixed technologies (combining teacher-led learning with online learning) 					
3. What in your opinion should be modern lecture forms of teaching? <ol style="list-style-type: none"> 3. Broadcast training material 4. Be consultative in nature 					
4. Which of the following web services do you use in teaching subjects? <ol style="list-style-type: none"> 7. Social networks (attraction of additional educational information, discussion of educational issues) 8. Cloud resources (storage of training materials, monitoring the results of the of students self-education work) 9. Disciplinary e-learning resources 10. Educational portal 11. Not using 12. Other _____ 					
5. Which of the following pedagogical approaches are most effective in training specialists (5 are the most effective, 1 are not effective):					
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Modular training (block-modular presentation of information - purpose, volume, level of assimilation)	5	4	3	2	1
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6. Which of the following training elements can increase the level of entrepreneurial competencies (intentions) of students (undergraduates): <ul style="list-style-type: none"> 9. Organization of meetings and lectures with entrepreneurs 10. Implementing mentoring programs 11. Organization of seminars and round tables aimed at discussing the practical aspects of entrepreneurship 					

12. Creation of educational programs on entrepreneurship / implementation of individual courses
13. Communication with experts, entrepreneurs and other specialists
14. Competitions of business plans, coaching programs, etc.
15. Solving business cases, participating in business games aimed at creating students' creative thinking
16. Other _____ -

7. What characteristics should a graduate student possessing entrepreneurial competencies possess:

10. To be able to see opportunities for activity and to know the labor market well
11. Follow the ethical principles of enterprises and entrepreneurs
12. Plan, organize, manage, delegate, analyze, evaluate, keep records
13. Represent the organization and negotiate
14. Work independently and in a team
15. Assess the situation, identify strengths and weaknesses, take risks
16. Take the initiative, act in advance
17. Motivate others and be motivated and decisive in achieving goals
18. Other _____

8. To what extent do the study programs offered by the university help undergraduates master the following competencies? (5-completely help, 1-not help)

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Ability to anticipate new challenges	5	4	3	2	1
Ability to acquire new knowledge	5	4	3	2	1
The ability to negotiate effectively	5	4	3	2	1
Ability to take decisive action in situations of uncertainty	5	4	3	2	1
Ability to work under pressure, stress resistance	5	4	3	2	1
The ability to adapt to change, flexibility	5	4	3	2	1
Open to new opportunities	5	4	3	2	1
Ability to plan, organize and coordinate activities	5	4	3	2	1
The ability to effectively distribute time, time management	5	4	3	2	1
The ability to work productively in a team	5	4	3	2	1
Ability to inspire others	5	4	3	2	1
Ability to communicate ideas easily	5	4	3	2	1

Ability to fulfill the duties of a leader	5	4	3	2	1
Ability to use information and communication technology	5	4	3	2	1
The ability to seek new ways and directions for applying existing knowledge	5	4	3	2	1
The ability to come up with new ideas and solutions	5	4	3	2	1
Willingness to challenge existing ideas	5	4	3	2	1
The ability to present a product, ideas or reports in public	5	4	3	2	1
Ability to create reports and information notes	5	4	3	2	1
Ability to communicate in a foreign language	5	4	3	2	1
9. What measures do you consider most effective to improve the quality of training of specialists?					
16. Updating curricula in accordance with the demands of the IT market 17. Providing students and young professionals with internship opportunities at leading IT companies 18. When practitioners are involved in the educational process 19. Improving the material and technical base of the university (does not correspond to the advanced technologies used in the real sector of the economy) 20. Conducting conferences, workshops, etc. 21. Granting students and young specialists grants for research, development 22. Attracting employers to the magistracy commission 23. Joint employer management of graduation projects 24. Attracting employers to the final assessment of graduate results, to assessing the quality of education at the university 25. Establishing links between the university and companies working in the IT industry 26. Invitation of practitioners to read special courses and seminars 27. Teacher workload reduction 28. Motivation of scientific activity of young scientists (dissertation defense) 29. Salary increase 30. Other _____					
10. What do you lack for training highly qualified specialists?					
15. Knowledge I have of their discipline 16. The use of active teaching methods 17. Methods of teaching your discipline 18. Computer technology 19. Audience management techniques 20. Organizational skills 21. Innovative approaches to the organization of the educational process					

22. Psychology
23. Interpersonal relationships
24. Knowledge of a foreign language
25. Self-organization
26. Foreign teaching experience
27. Sufficiently equipped libraries with textbooks and teaching aids
28. Other _____

11. In your opinion, what needs to be done to reduce the difference between labor market needs and university studies?

2. Indicate the university where you work

- Belarusian State University
- Belarusian State University of informatics and radio electronics
- Belarusian National Technical University
- Brest State Technical University
- Gomel State Technical University
- Polotsk State University
- Yanka Kupala Grodno State University
- Other _____

Science Degree:

9. Doctor of Science
10. PhD
11. Master of Science
12. I do not have a degree

Work experience at your university:

13. Up to 2 years
14. From 2 to 10 years
15. From 10 to 20 years
16. More than 20 years

Gender:

3. Male
4. Female

Age:

6. Up to 25 years
7. 26-35

- | | |
|-----|-------------|
| 8. | 36-45 |
| 9. | 46-55 |
| 10. | 56 and more |

Review form for the deliverable

<https://docs.google.com/document/d/1U-e-SRhtYSY EXiWoFWWkAyZzghU 1u9/edit>

This review form for the deliverable contains the checklist which supports Bellorussian Partners to prepare the report in accordance with the IMRAD (Introduction, Methodology, Results, Discussion) structure and goals of MACICT Project. Such kind of structure allows for a better evaluation and development of project novelty.

MACICT Review Form for the deliverable D... Updates in the curriculum

Criteria (evaluate from 1(the lowest grade) to 5 (the highest grade)	Comment
1. RELEVANCE to MACICT Project and WP... Goals	
2. OBJECTIVES Clear and well described:	
3. Quality of WRITING Clear and Grammatically Correct:	
4. Deliverable well-ORGANIZED with logical flow of argument:	
5. LITERATURE REVIEW complete:	
6. METHODOLOGY: action research design, methods, instruments: Data analysis correct and appropriate:	
7. EVIDENCE supports author arguments and objectives:	
8. Report has a CONTRIBUTION to the project:	

6. What are the strengths of this deliverable?
7. How may this report be improved?
8. What are the key contributions of this report?
9. Please provide any additional comments of suggestions (i.e. references) that may assist the authors.
10. In the space below, please write your review for the author(s).

A detailed review of a manuscript is an invaluable aid to the author(s) in improving the overall technical quality, utility and readability of their paper. Please provide technically substantive comments that will help the author(s) to:

1. Correct errors and misconceptions;
2. State appropriate, accurate and relative conjectures and results;
3. Employ better definitions, diagrams, tables, graphs and examples;
4. Use a minimum of contemporary, relevant and essential references;
5. Make the article technically consistent and complete; and
6. Organize the material to help the reader understand the issues presented.

Suggested literature

8. Chava Frankfort-Nachmias; David Nachmias (1992). Research methods in the social sciences. New York : St. Martin's Press.
9. Wermann J, Kliesing N, Colombo A W, Cardoso Moraes E (2015): "Impact of new ICT trends for the educational curriculum in the area of Industrial Automation and engineering". In Proc. of the 41st Annual Conference of the Industrial Electronics Society (IECON 2015), pp. 3643-3648.
10. Juho Maekioe, S. Piashkun, Jolanta Kowal, M. Paasivaara, E. Surkova (2019). Fit for the future - Modernisation of Master Curriculum in ICT for Enhancing Student Employability in Belarus, EDULEARN. - Vol. 17 (2019), pp. 9116-9122. Available at <http://dx.doi.org/10.21125/edulearn.2019.2249>.

11. Mäkiö J, Mäkiö-Marusik E and Yablochnikov E (2016): "Task-centric holistic agile approach on teaching cyber physical systems engineering," IECON 2016-42nd Annual Conference of the IEEE, pp. 6608–6614.
12. Mäkiö-Marusik E, Mäkiö J and Kowal J (2017), "Implementation of Task-Centric Holistic Agile Approach on Teaching Cyber Physical Systems Engineering." In 23rd Americas Conference on Information Systems (AMCIS'17), Boston, 2017, At Boston, USA.
13. Kurki-Suonio K (2011): "Principles supporting the perceptual teaching of physics: A "practical teaching philosophy?," Science & Education, vol. 20, pp. 211–243.
14. Chun AHW (2004), "The agile teaching/learning methodology and its e-learning platform," International Conference on Web-Based Learning, Springer, pp. 11–18.

Quality Assurance hierarchy scheme and plan

<https://docs.google.com/document/d/1Wh7sSLv64T4LznYLwaZXq9v0wlnCM4pCaFElsWteKYA/edit#>

Quality assurance in the project will be exercised at two levels (see Figure 1):

(1) ensuring optimal quality of the project implementation through all of its phases – preparatory, developmental, pilot, follow-up, dissemination and exploitation, based on monitoring of the progress and evaluation of the achieved results; and

(2) ensuring high quality of the development of a methodology for assessing the activities carried out at the beginning and end of the course, to develop and adopt evaluation tools for the learning process, to assess the quality of education on the modernised MSC programme in ICT.

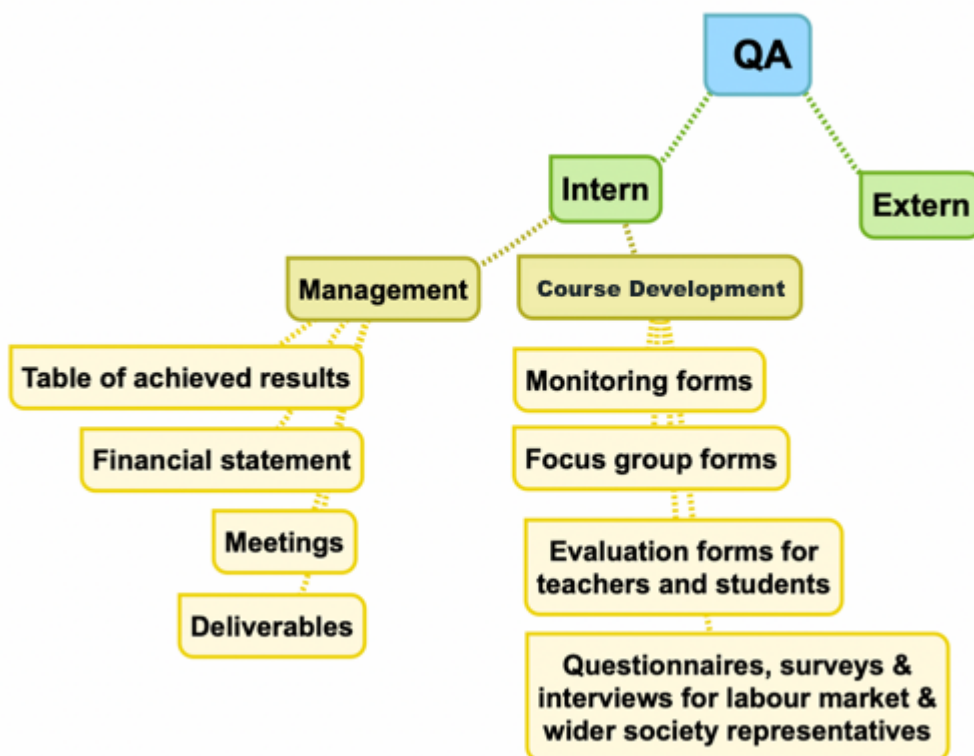


Figure 1: Quality Assurance hierarchy

After each project year one summarizing internal report will be prepared and delivered for check to external reviewers.

In the last, third year, an external reviewer will check the QA of the project 3 times.

Conclusions

All tools were developed in cooperation with BY Partners. They are used to strengthen and develop competences in the field of the so-called key competences in the context of the Bologna Process, especially in the field of knowledge, practical skills and social competences.

 Tools to measure the improvements in approaches & methods

Beneficiary	Name of Reviewers	Role	Status
HSEL	Juho Mäkiö	Coordinator	approved
HSEL	Evgeniia Surkova	LPM	cognizanced
UWR	Jolanta Kowal	LPM	Approved
ITU	Maria Paasivaara	LPM	
BSUIR	Alexandra Sidorovich	LPM	Approved
PSU	Rykhard Bogush	LPM	Approved
PSU	Siarhei Piashun	QA Controller	Approved
GSTU	Kanstantsin Kurachka	LPM	Approved
BrSTU	Svetlana Lebed	LPM	Approved
YKSUG	Lada Rudikova	LPM	Approved