



# Environmental Risk Assessment and Mitigation on Cultural Heritage assets in Central Asia

**ERAMCA**

ERASMUS+ CBHE Project nr. 609574



## Deliverable D2.5

### Basic knowledge of potential students

Date	Version	Author(s)
04.01.2021	Final	Shuhrat Usmonov



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## 1. Introduction.

Within the framework of the ERAMCA Erasmus + project, a QUESTIONNAIRE was developed according to the professional competencies that a graduate who has mastered the bachelor's program should have, corresponding to the types of professional activities that the bachelor's program is focused on to determine the assessment of the basic knowledge of graduates of the specialty 700201- Civil Engineering and 690101-Architecture KPITTU and TTU, as well as graduates of the specialty Civil Engineering TTPU and 1340200- Civil Engineering and 1340100-Architecture SamSACII.

A survey was conducted among members of the state examination commission on the degree of readiness of graduates of the last three years. They evaluated on a five-point scale (1 - low level of development, 5 - high level of development) the level of mastering by graduates of professional competencies according to state educational standards of specialties.

## 2. Analysis of the assessment of the basic knowledge of graduates of KPITTU, TTU, TTPU and SamSACII in Civil Engineering and Architecture.

To analyze the assessment of the basic knowledge of graduates of KPITTU, TTU, TTPU and SamSACII, 18 questionnaires were received in the specialty of Civil Engineering and 9 questionnaires in the specialty of Architecture. There were 15 positions in the questionnaire with a specialization in Civil Engineering for the definition of Learning Outcomes, and in the specialty in Architecture there were 18 positions for definition of Learning Outcomes. A total of 27 questionnaires were analyzed to determine the assessment of the basic knowledge of graduates.

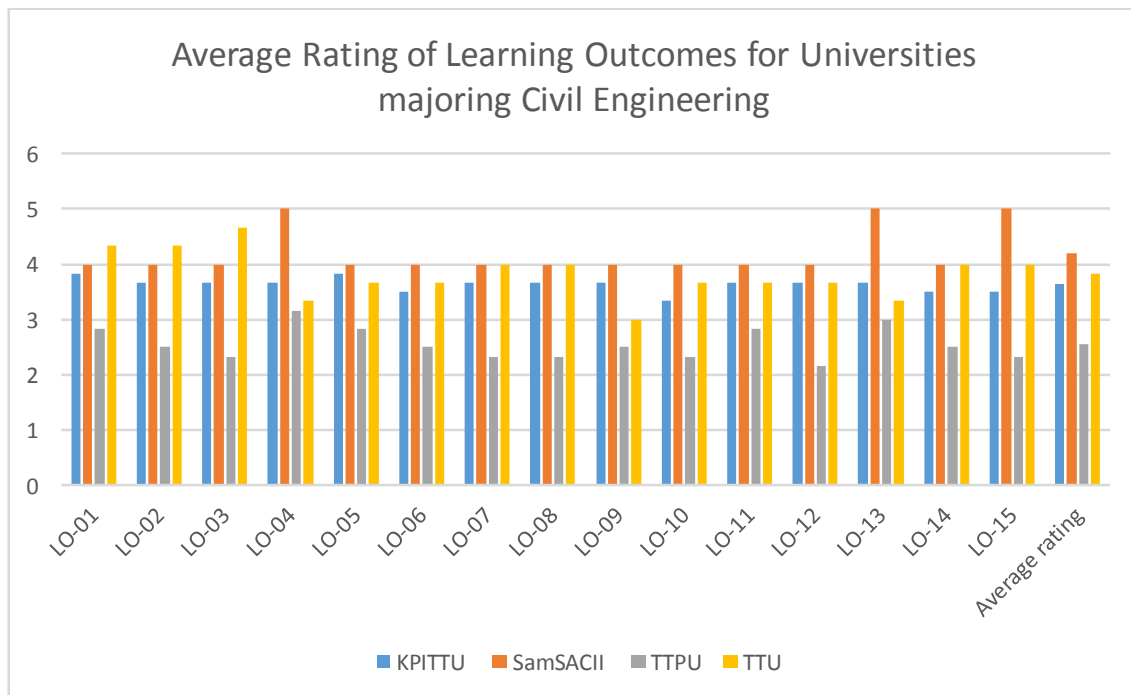
**Table 1. ASSESSMENTS OF BASIC KNOWLEDGE OF GRADUATES OF KPITTU, TTU, TTPU AND SAMSACII IN CIVIL ENGINEERING.**

University	Full name	The academic year	LO-01	LO-02	LO-03	LO-04	LO-05	LO-06	LO-07	LO-08	LO-09	LO-10	LO-11	LO-12	LO-13	LO-14	LO-15	Average rating
KPITTU	Usmonov Sh.Z.	2017-2018	4	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3
KPITTU	Usmonov Sh.Z.	2018-2019	4	4	4	3	4	3	4	4	3	3	4	4	3	3	3	3,53
KPITTU	Usmonov Sh.Z.	2019-2020	4	4	4	4	4	3	4	4	4	3	4	4	4	4	4	3,87
KPITTU	Yakubdzhanov I.	2017-2018	3	3	3	4	4	4	3	3	4	3	3	3	4	3	4	3,4
KPITTU	Aminov F.A.	2018-2019	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
KPITTU	Aminov F.A.	2019-2020	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
TTU	Samiev Kh.	2017-2018	4	4	4	3	3	4	3	3	3	3	4	3	3	5	4	3,53
TTU	Usmanov A.	2018-2019	4	5	5	4	3	4	5	5	3	3	4	5	4	4	3	4,07
TTU	Usmanov A.	2019-2020	5	4	5	3	5	3	4	4	3	5	3	3	3	3	5	3,87
TTPU	Usmanov S.	2017-2018	3	2	3	2	3	3	3	2	3	3	3	2	2	2	2	2,53
TTPU	Usmanov S.	2018-2019	2	3	2	4	3	2	2	2	3	2	4	2	4	3	2	2,67

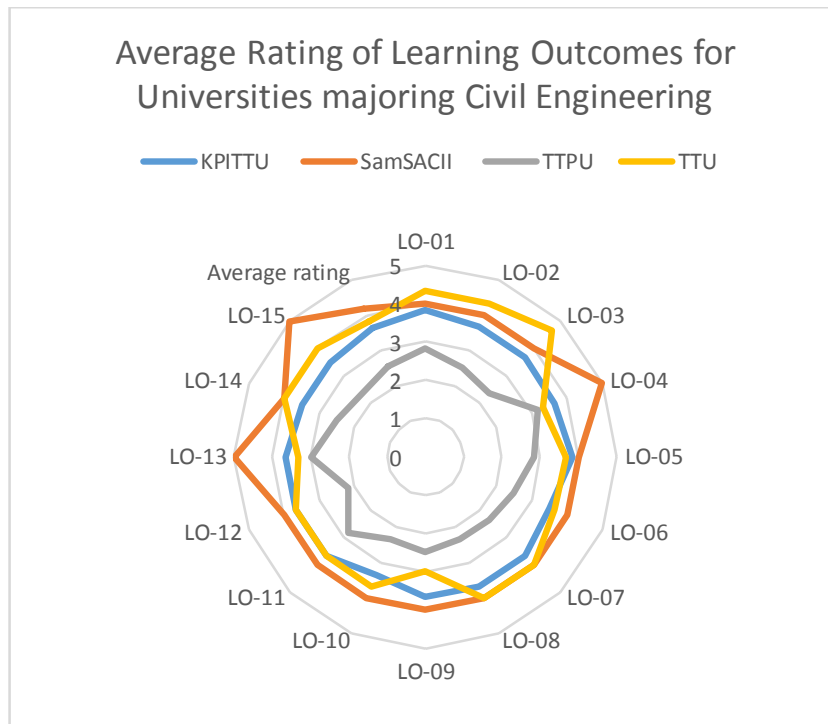
University	Full name	The academic year	LO-01	LO-02	LO-03	LO-04	LO-05	LO-06	LO-07	LO-08	LO-09	LO-10	LO-11	LO-12	LO-13	LO-14	LO-15	Average rating
TTPU	Usmanov S.	2019-2020	4	4	3	4	3	4	3	4	3	3	4	3	4	4	4	3,6
TTPU	Khaltarsunov E.	2017-2018	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2,07
TTPU	Khaltarsunov E.	2018-2019	3	2	2	3	3	2	2	2	2	2	2	2	3	2	2	2,27
TTPU	Khaltarsunov E.	2019-2020	3	2	2	3	3	2	2	2	2	2	2	2	3	2	2	2,27
SamSA CII	Razzakov H.	2017-2018	4	4	4	5	4	4	4	4	4	4	4	4	5	4	5	4,2
SamSA CII	Razzakov H.	2018-2019	4	4	4	5	4	4	4	4	4	4	4	4	5	4	5	4,2
SamSA CII	Razzakov H.	2019-2020	4	4	4	5	4	4	4	4	4	4	4	4	5	4	5	4,2

**Table 2. AVERAGE RATING OF LEARNING OUTCOMES FOR UNIVERSITIES MAJORING CIVIL ENGINEERING.**

University	LO-01	LO-02	LO-03	LO-04	LO-05	LO-06	LO-07	LO-08	LO-09	LO-10	LO-11	LO-12	LO-13	LO-14	LO-15	Ср.оценка
KPITTU	3,8	3,7	3,7	3,7	3,8	3,5	3,7	3,7	3,7	3,3	3,7	3,3	3,5	3,3	3,5	3,59
SamSACII	4	4	4	5	4	4	4	4	4	4	4	4	5	4	5	4,2
TTPU	2,8	2,5	2,3	3,2	2,8	2,5	2,3	2,3	2,5	2,3	2,8	2,2	3	2,5	2,3	2,57
TTU	4,3	4,3	4,7	3,3	3,7	3,7	4	4	3	3,7	3,7	3,7	3,3	4	4	3,82



**Figure 1. Average Rating of Learning Outcomes for Universities majoring Civil Engineering.**



**Figure 2.** Average Rating of Learning Outcomes for Universities majoring Civil Engineering.

**Table 3.** AVERAGE RATING BY YEARS OF GRADUATES OF KPITTU, TTU, TTPU AND SAMSACII IN CIVIL ENGINEERING.

The academic year	LO-01	LO-02	LO-03	LO-04	LO-05	LO-06	LO-07	LO-08	LO-09	LO-10	LO-11	LO-12	LO-13	LO-14	LO-15	Average rating
<b>2017-2018</b>	3,3	3	3,2	3,3	3,2	3,3	3	2,8	3,2	3	3,2	2,8	3,2	3,2	3,2	3,12
<b>2018-2019</b>	3,5	3,7	3,5	3,8	3,5	3,2	3,5	3,5	3,2	3	3,7	3,5	3,8	3,3	3,2	3,46
<b>2019-2020</b>	4	3,7	3,7	3,8	3,8	3,3	3,5	3,7	3,3	3,5	3,5	3,3	3,8	3,5	4	3,63

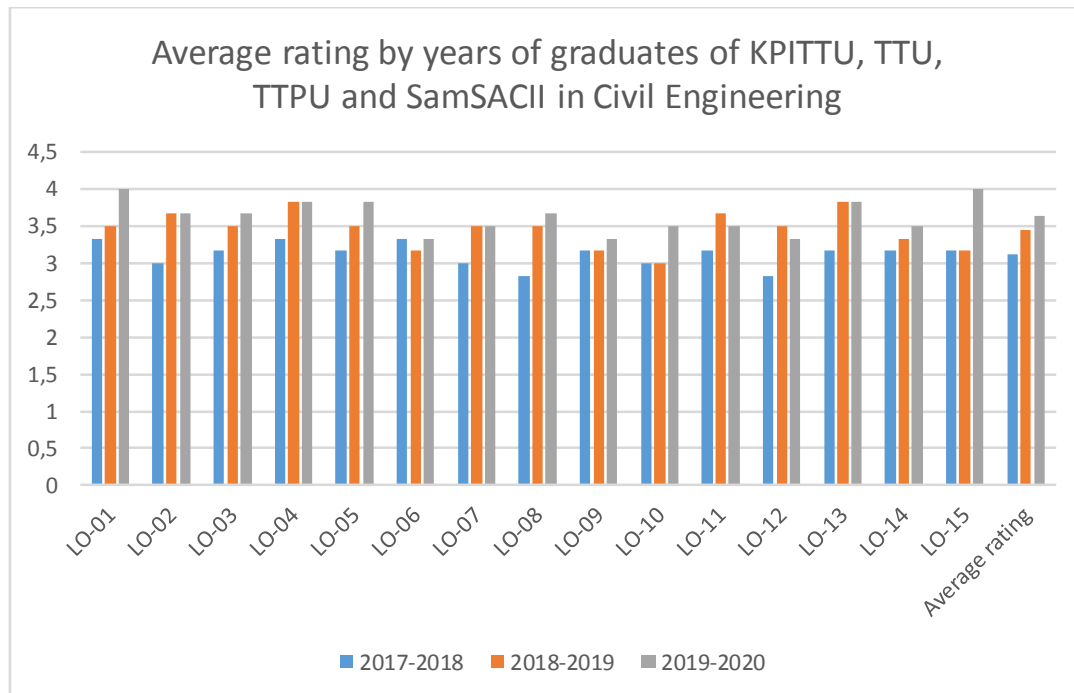


Figure 3. Average rating by years of graduates of KPITTU, TTU, TTPU and SamSACII in Civil Engineering.

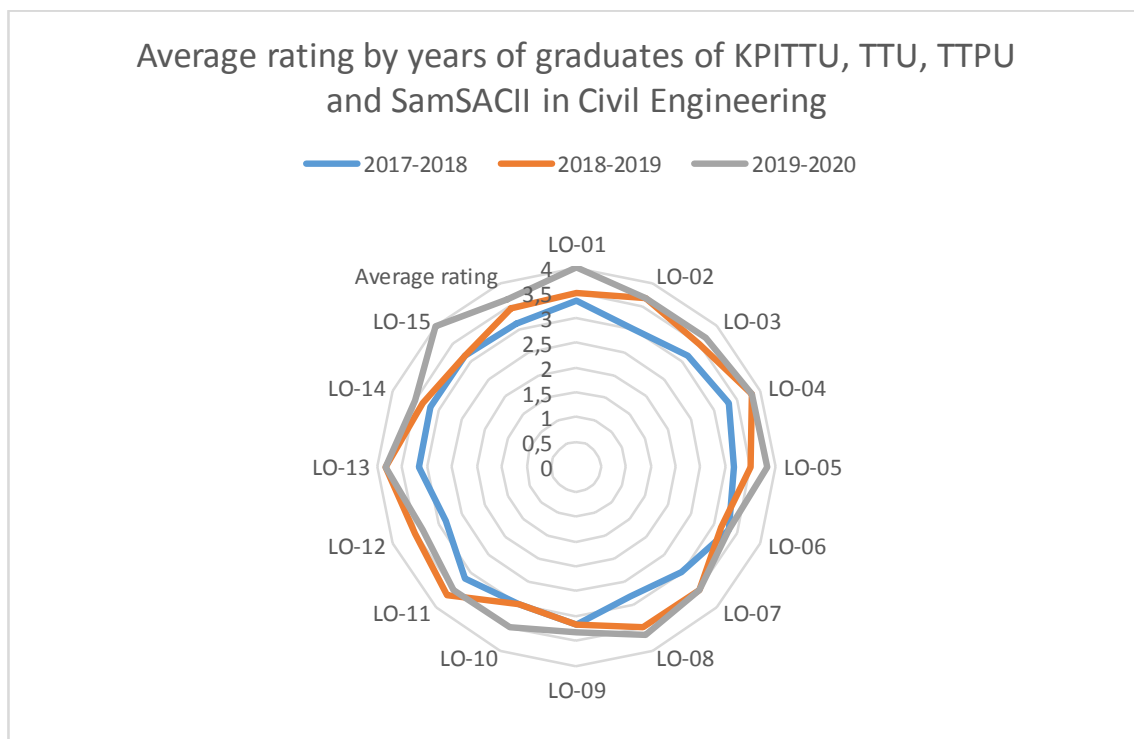


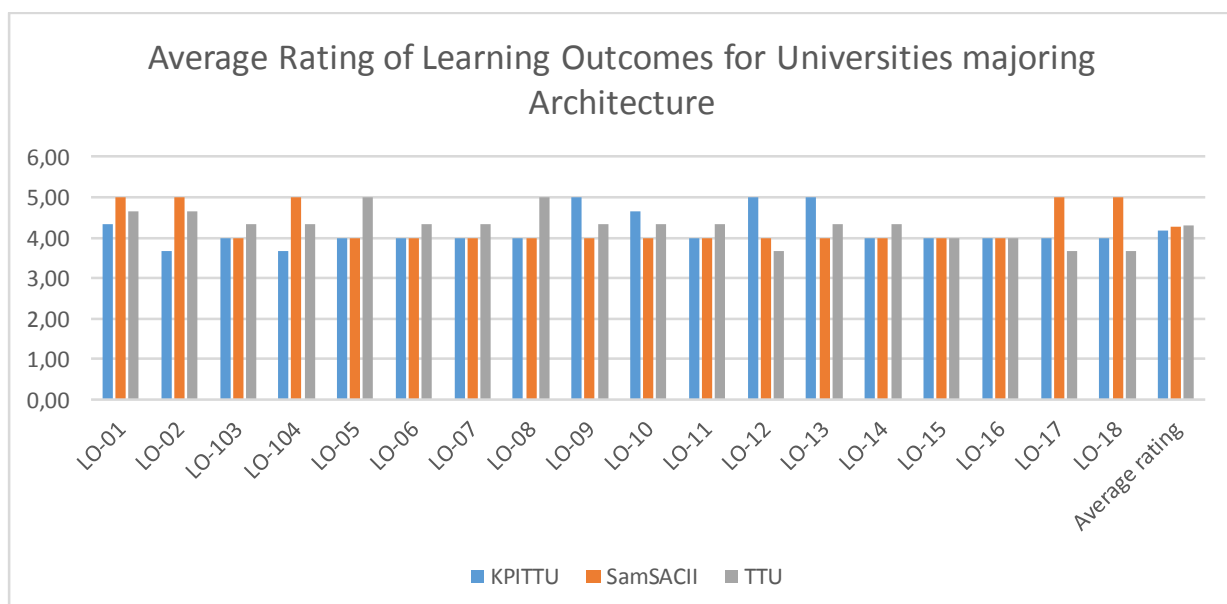
Figure 4. Average rating by years of graduates of KPITTU, TTU, TTPU and SamSACII in Civil Engineering.

**Table 4. ASSESSMENTS OF BASIC KNOWLEDGE OF GRADUATES OF KPITTU, TTU, TTPU AND SAMSACII IN ARCHITECTURE.**

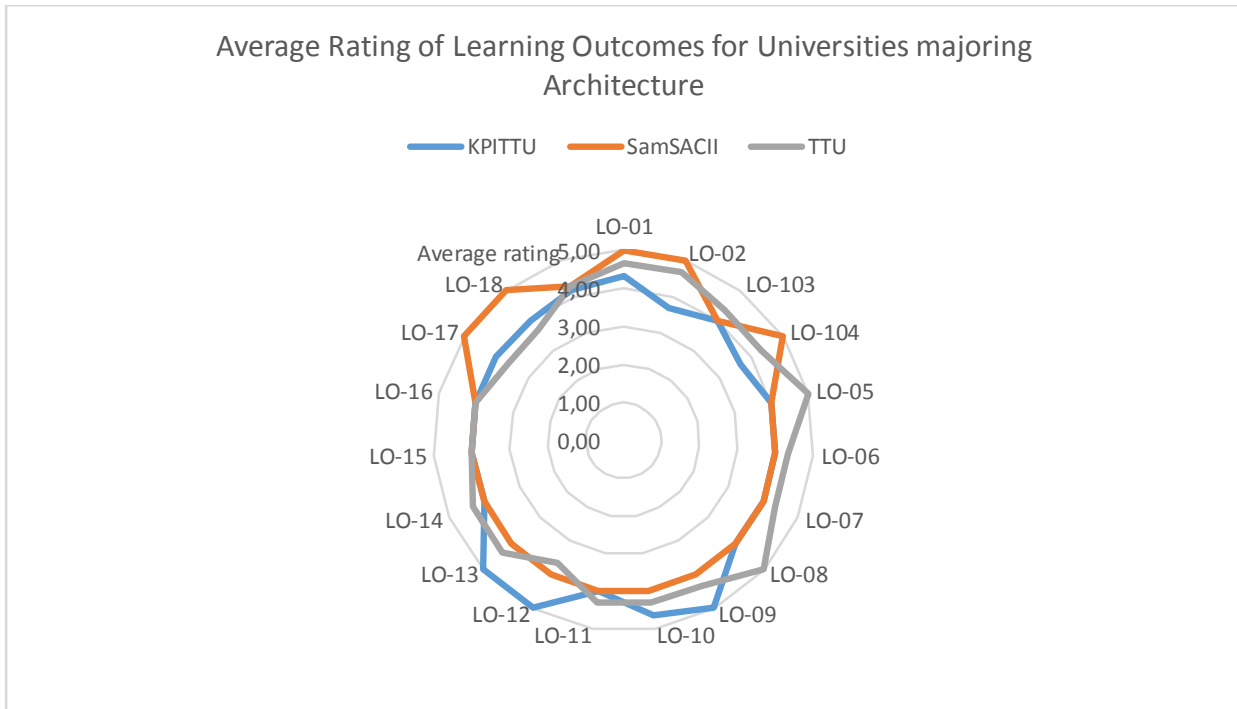
University	Full name	The academic year	LO-01	LO-02	LO-03	LO-04	LO-05	LO-06	LO-07	LO-08	LO-09	LO-10	LO-11	LO-12	LO-13	LO-14	LO-15	LO-16	LO-17	LO-18	Average rating
KPITTU	Yusupov K. H.	2017-2018	4	3	4	3	4	4	3	4	5	4	4	5	5	4	4	4	4	4	4
KPITTU	Mukhamedov S.	2018-2019	4	4	4	4	4	4	4	4	5	5	4	5	5	4	4	4	4	4	4,22
KPITTU	Yusupov F. G.	2019-2020	5	4	4	4	4	4	5	4	5	5	4	5	5	4	4	4	4	4	4,33
TTU	Shahobov M.	2017-2018	5	5	4	4	5	4	4	5	5	5	4	3	3	4	4	4	3	3	4,11
TTU	Rakhmatullozoda Sh.	2018-2019	4	4	4	4	5	5	5	5	4	4	5	4	5	4	4	4	4	4	4,33
TTU	Kobuliev Z.	2019-2020	5	5	5	5	5	4	4	5	4	4	4	4	5	5	4	4	4	4	4,44
SamsACII	Hidirov M.	2017-2018	5	5	4	5	4	4	4	4	4	4	4	4	4	4	4	4	5	5	4,28
SamsACII	Hidirov M.	2018-2019	5	5	4	5	4	4	4	4	4	4	4	4	4	4	4	4	5	5	4,28
SamsACII	Hidirov M.	2019-2020	5	5	4	5	4	4	4	4	4	4	4	4	4	4	4	4	5	5	4,28

**Table 5. AVERAGE RATING BY YEARS OF GRADUATES OF KPITTU, TTU, TTPU AND SAMSACII IN ARCHITECTURE.**

University	LO-01	LO-02	LO-103	LO-104	LO-05	LO-06	LO-07	LO-08	LO-09	LO-10	LO-11	LO-12	LO-13	LO-14	LO-15	LO-16	LO-17	LO-18	Average rating	
KPITTU	4,33	3,67	4,00	3,67	4,00	4,00	4,00	4,00	5,00	4,67	4,00	5,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	4,19
SamsACII	5,00	5,00	4,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	5,00	5,00	5,00	4,28
TTU	4,67	4,67	4,33	4,33	5,00	4,33	4,33	5,00	4,33	4,33	4,33	3,67	4,33	4,33	4,00	4,00	3,67	3,67	3,67	4,30



**Figure 5. Average Rating of Learning Outcomes for Universities majoring Architecture.**

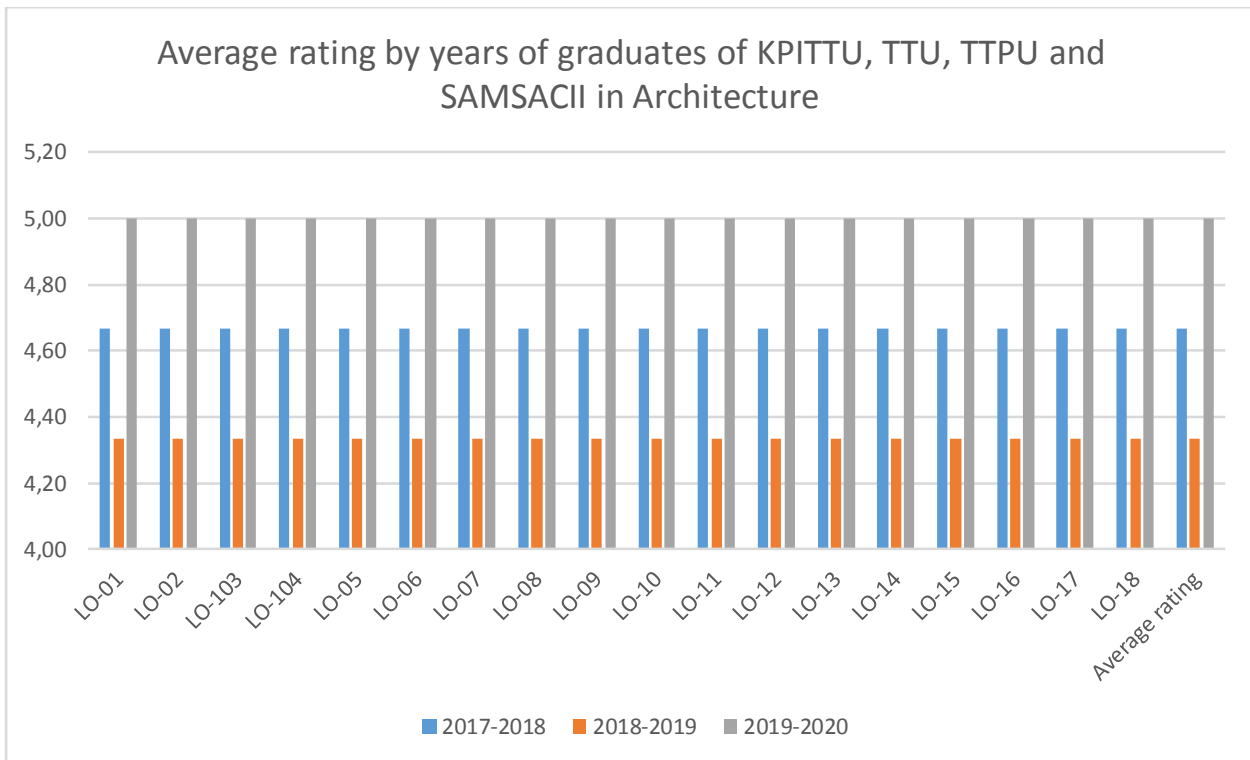


**Figure 6.** Average Rating of Learning Outcomes for Universities majoring Architecture.

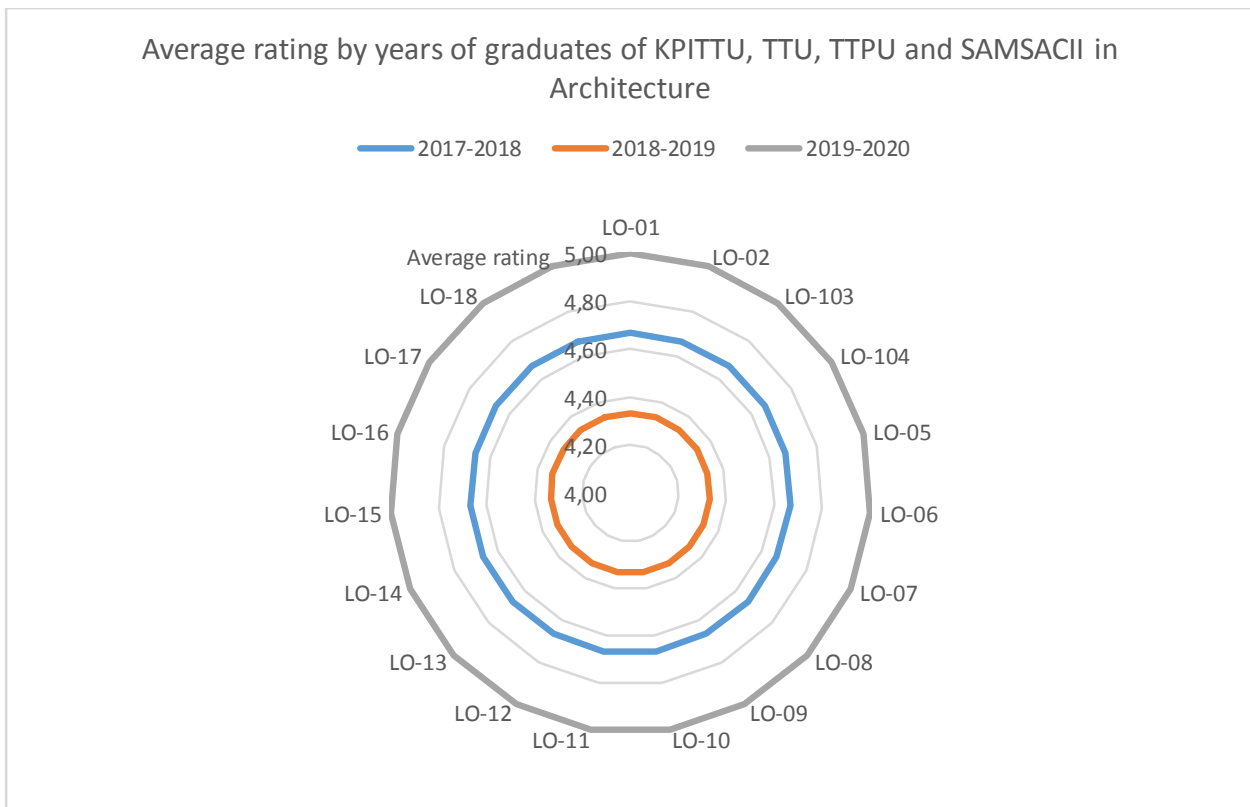
**Table 6.** AVERAGE RATING BY YEARS OF GRADUATES OF KPITTU, TTU, TTPU AND SAMSACII IN ARCHITECTURE.

The academic year	LO-01	LO-02	LO-103	LO-104	LO-05	LO-06	LO-07	LO-08	LO-09	LO-10	LO-11	LO-12	LO-13	LO-14	LO-15	LO-16	LO-17	LO-18	Average rating
2017-2018	4,67	4,67	4,67	4,67	4,67	4,67	4,67	4,67	4,67	4,67	4,67	4,67	4,67	4,67	4,67	4,67	4,67	4,67	4,67
2018-2019	4,33	4,33	4,33	4,33	4,33	4,33	4,33	4,33	4,33	4,33	4,33	4,33	4,33	4,33	4,33	4,33	4,33	4,33	4,33
2019-2020	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00





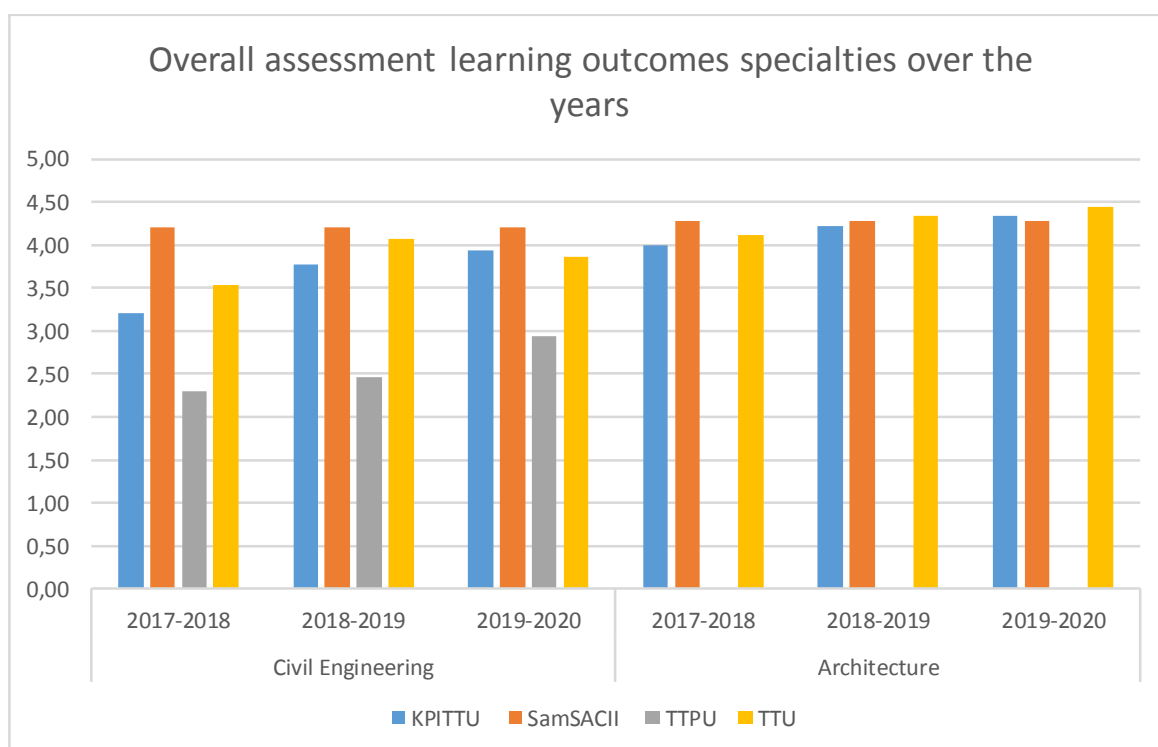
**Figure 7.** Average rating by years of graduates of KPITTU, TTU, TTPU and SamSACII in Architecture.



**Figure 8.** Average rating by years of graduates of KPITTU, TTU, TTPU and SamSACII in Architecture.

**Table 7. OVERALL ASSESSMENT LEARNING OUTCOMES SPECIALTIES OVER THE YEARS.**

University	Civil Engineering			Architecture		
	2017-2018	2018-2019	2019-2020	2017-2018	2018-2019	2019-2020
<b>KPITTU</b>	3,20	3,77	3,93	4,00	4,22	4,33
<b>SamSACII</b>	4,20	4,20	4,20	4,28	4,28	4,28
<b>TTPU</b>	2,30	2,47	2,93	-	-	-
<b>TTU</b>	3,53	4,07	3,87	4,11	4,33	4,44



**Figure 9.** Overall assessment learning outcomes specialties over the years.

**Table 8. OVERALL ASSESSMENT LEARNING OUTCOMES SPECIALTIES OVER THE YEARS.**

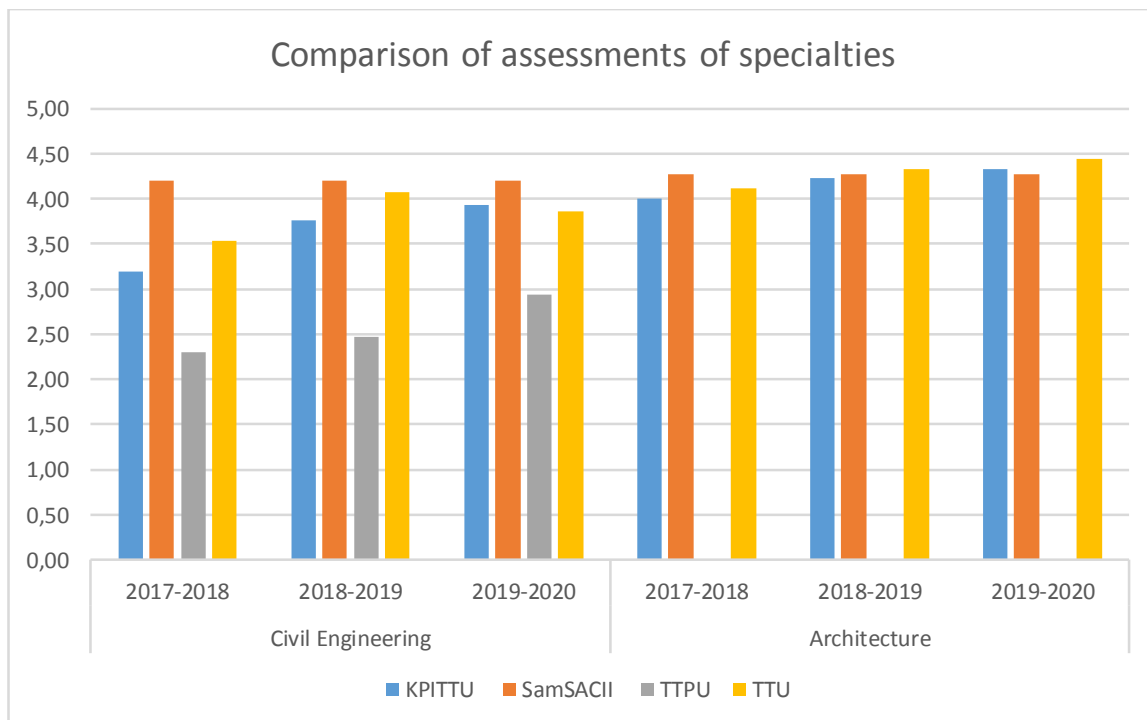
University		KPITTU	SamSACII	TTPU	TTU	In all
<b>Civil Engineering</b>	2017-2018	3,10	4,20	2,30	3,53	3,28
	2018-2019	3,73	4,20	2,47	4,07	3,62
	2019-2020	3,93	4,20	2,93	3,87	3,73
<b>Architecture</b>	2017-2018	4,00	4,28	-	4,11	4,13
	2018-2019	4,22	4,28	-	4,33	4,28
	2019-2020	4,33	4,28	-	4,44	4,35

**Table 9. COMPARISON OF ASSESSMENTS OF SPECIALTIES.**

University	Civil Engineering			Architecture		
	2017-2018	2018-2019	2019-2020	2017-2018	2018-2019	2019-2020
<b>KPITTU</b>	3,20	3,77	3,93	4,00	4,22	4,33
<b>SamSACII</b>	4,20	4,20	4,20	4,28	4,28	4,28
<b>TTPU</b>	2,30	2,47	2,93	-	-	-
<b>TTU</b>	3,53	4,07	3,87	4,11	4,33	4,44

**Table 10. COMPARISON OF ASSESSMENTS OF SPECIALTIES.**

University	KPITTU	SamSACII	TTPU	TTU	In all	
<b>Civil Engineering</b>	2017-2018	3,10	4,20	2,30	3,53	3,28
	2018-2019	3,73	4,20	2,47	4,07	3,62
	2019-2020	3,93	4,20	2,93	3,87	3,73
<b>Architecture</b>	2017-2018	4,00	4,28	-	4,11	4,13
	2018-2019	4,22	4,28	-	4,33	4,28
	2019-2020	4,33	4,28	-	4,44	4,35



**Figure 10. Comparison of assessments of specialties.**

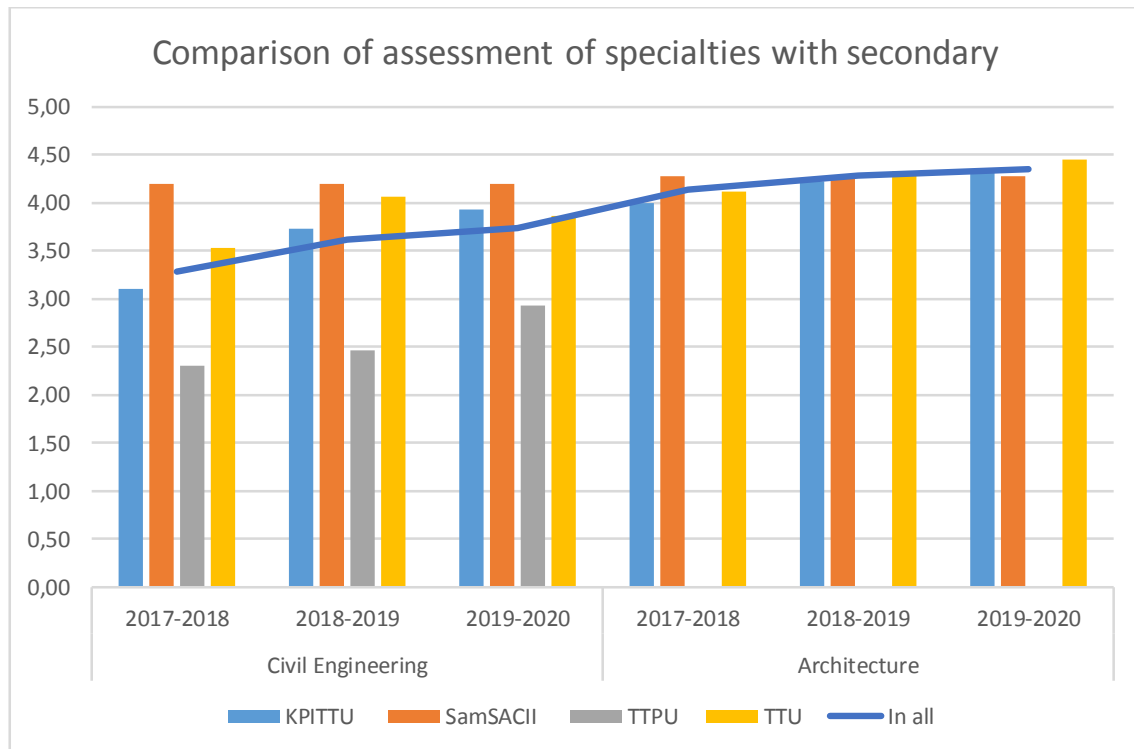


Figure 11. Comparison of assessment of specialties with secondary.

### 3. Overall conclusion.

By the type of professional activity in the direction of "Civil Engineering", the specific types of activity of the graduate are determined: 1) exploration and design activities; 2) production-technological and production-management activities; 3) experimental research. In the direction of "Architecture": 1) design activities; 2) research activities; 3) communication activities; 4) organizational and management activities; 5) critical and expert activities. In accordance with the types of activities, the future civil engineer and architect must be prepared to solve professional problems. In an integrated form, the requirements for a modern engineer and architect for the results of his professional activity can be formulated as follows: the ability to readiness to creatively solve professional problems, the ability to navigate in non-standard conditions, possession of the system of necessary fundamental and special knowledge and practical skills necessary for the creation and implementation of competitive objects; methodological training; striving for continuous personal and professional improvement; high communication readiness, including in an inter-professional team; professional responsibility and ethics.

The first level of students' readiness to solve professional problems is characterized by the ability to solve problems according to a model based on reproductive thinking, contains initial skills in the analysis of computational and graphic problems. The second level of a student's readiness to solve professional problems is characterized by the ability to solve individual technical problems. At the third level of readiness, further expansion and deepening of the role of general professional technical knowledge, characterized by the ability to solve complex engineering problems, is carried out. The core of engineering activity, an indicator of the professional readiness of a future civil engineer and architect is the ability to solve professional problems and problems at a high level of quality. Our research allows us to conclude that the training of future civil engineers and architects KPITTU, TTU, TTPU and SamSACII and their readiness to solve professional problems as a prerequisite for the professional readiness of the bachelor and future potential masters in assessing and mitigating environmental risks for cultural heritage sites in Central Asia is at a good level.