



Modernization of Mechatronics and Robotics for bachelor's degree
in Uzbekistan through Innovative Ideas and Digital Technology
(MechaUz)

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MechaUz_D.2.4_Presenting, discussing and publishing Bachelor's program_V.1

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Approval Table

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ABBREVIATIONS

<i>Acronym</i>	<i>Definition</i>
BS	Bachelor science
DoW	Description of Work
EC	European Commission
WP	Work Package
WPL	Work Package Leader
WP2	Work Package 2
MechaUz	Modernization of Mechatronics and Robotics for Bachelor degree in Uzbekistan through Innovative Ideas and Digital Technology



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Presenting and discussing process of the Bachelor's program

[In the Kick-Off Meeting, Thessaloniki, Greece](#), Development of the new BSc program activities started to discuss in detail. After the kick-off meeting research of BSc program in mechatronics and Robotics was started and during the web meetings, achieved results presented and discussed by the partners.

[In the 3rd ZOOM Meeting, 25 June 2020](#), VGTU presented the necessary disciplines and the list of practical lab-works. The theoretical course list has been explained, as well as the pedagogical material, the list of books and the credits for our Bachelor's Degree.

[In the 5th ZOOM Meeting, 25 November 2020](#), Presentation from VGTU on the topic of the [development of the Curriculum](#) was presented and Analysis of the aims and results of the study program, as well as of the courses, ECTS credits and hours per semester was explained.

[In the 7th ZOOM Meeting, 9 June 2021](#), Discussion on the progress of the curriculum development.

[In the 9th ZOOM Meeting, 5 October 2021](#), Discussion between EU and UZ partners on the topic of the curricula:

- 3-, 4-, and 5 – year degrees (or integrated master's degree).
- Examination to evaluate the future 3-year Bachelor students.
- The already existing Mechatronics courses in Uzbek HEIs
- Discussion on the accreditation requirements to EU partners for the successful creation of the curricula.

[In the 10th ZOOM Meeting, 27 January 2022](#), Developing and modernizing standards, curriculum and teaching programs were discussed and agreed that:

The basic standard, curriculum and teaching programs will be developed by VGTU. Based on basic, 4 versions of curriculums will be modernized by: 1-version: TTPU, 2-version: TUIT, 3-version: AndMI, 4-version: TSTU, KEII, FPI.

[In the 11th ZOOM Meeting, 30 March 2022](#), Andijan machine-building institute had presented what has been done so far on curriculum development, mentioned the meeting held in Tashkent, 26th of March by Uzbek partners and gave quite good experience and advancement in study plan preparation. 2 drafts of study plans have been chosen, will be finalized in the next meeting on Saturday 2nd of April in Tashkent.

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18 courses have been developed, 12 needs to be chosen to develop materials and methodology of these courses. During the meeting VGTU presented execution of the study program. VGTU provided all details of study programs with video message. At the end, Uzbek partners will finalize curricula development and send draft version prepared to EU partners.

Selected courses by Uzbek partners:

#	Name of course	Selected by:	ECTS	Comments
1	Engineering and computer graphics	AndMI	6	MKG1206 – Compulsory course 2-semester
2	Industrial electronics	AndMI	6	Elek1506 – Compulsory course 5-semester
3	Fundamentals of modeling and optimization of technological processes	AndMI	4	Elective course
4	Fundamentals of mechatronics	FPI	4	BM – Compulsory course 2-semester
5	Introduction to Mechatronics	FPI	4	BM – Elective course 2-semester
6	Mechatronic modules and information devices of robots	TSTU	10	MRIQ4810 -Compulsory course 7, 8-semester
7	Electronics and microprocessor systems	TSTU	10	SMT3510 – Compulsory course 4, 5-semester
8	Basics of automation of production processes	TTPU	9	ALT4709 -elective course 7-semester
9	Basics of machine elements and automatic design	TTPU	6	Elective course
10	Computer programming I	TUIT	6	PROG16MBK – Compulsory course 1-semester
11	Computer programming II	TUIT	6	PROG26MBK – Compulsory course 2-semester
12	Embedded systems	TUIT	6	EMSC16MBK – Compulsory course 6-semester
13	Fundamentals of Microcontroller Programming	KEEI	4	MUDA2604 – Compulsory course 4-semester
14	Fundamentals of artificial intelligence	KEEI	10	SIRT4808 – Compulsory course 7, 8-semester

Table_1: List of courses

[In the 2nd interpartner visit at TTPU, 16-20 May 2022](#), VGTU provided all details of study programs. There was a very long and productive discussion regarding the way Uzbek partners will adopt their bachelor degree programme. Also, the possibility to



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organize double-degree programmes with European universities in the field of mechatronics was discussed.

Publishing Bachelor's program and teaching materials

The project website was designed in Uzbekistan at much lower costs than in EU. Also, any technical and administrative tasks allocated to UZ partners to save the project budget resources in staff costs, for instance, in developing publishing materials and designs of brochures or booklets.

Developed Bachelor's program and materials were published on the project web-site (www.mechauz.uz) in the menu of RESULTS.

#	Title of items	Link on the project website
New standards and regulations of BS program in the field of Mechatronics and Robotics		
1	60711500-Mechatronics and robotics undergraduate educational program (English version)	Click and download
2	60711500-Mechatronics and robotics undergraduate educational program (Uzbek version)	Click and download

Table_2: Developed new standards of program

The standards were approved at the meeting of Coordinating Council of the Ministry on 8th of August, 2022, and declared by order #302 on 9th September, 2022.

#	Title of items	Link on the project website
Curriculums		
1	Curriculum of Andijan machine-building institute	Click and download
2	Curriculum of Turin Polytechnic University in Tashkent	Click and download
3	Curriculum of Fergana Polytechnic Institute	Click and download
4	Curriculum of Tashkent University of Information Technology	Click and download
5	Curriculum of Karshi Engineering-Economic Institute	Click and download
6	Curriculum of Tashkent State Technical University	Click and download

Table_3: List of developed curriculums by Uzbek partners

#	Title of items
Textbooks, manuals, soft skills, and new teaching methodology	

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1	Engineering and computer graphics. Handbook / M.Sh. Begijonov, F.Sh. Dumakhonov - Andijan, 2023. 110 pages.
2	NI ELVIS III. Manual / A.A. Yusupov, J.S. Rakhmatillayev - Andijan, 2023. 22 pages
3	Industrial electronics. handbook / D.S. Umarova, J.S. Rakhmatillayev - Andijan, 2023. 179 pages.
4	Fundamentals of modeling and optimization of technological processes. Handbook / U. Takabayev, O. Atabayev, Kh. Asranov - Andijan, 2023. 120 pages.
5	Fundamentals of mechatronics. Handbook / O.Kh.Otakulov, E.T.Mamurov, Yu.Yu.Khusanov - Fergana: Fergana Polytechnic Institute, 2023.-147 pages.
6	Fundamentals of mechatronics. Textbook / E.T.Mamurov, Yu.Yu.Khusanov, S.M.Yusupov - Fergana: Fergana Polytechnic Institute, 2023. 220 pages.
7	Introduction to Mechatronics. Textbook / E.T.Mamurov, S.M.Yusupov, Yu.Yu.Khusanov - Fergana. 2022. 150 pages
8	Mechatronics modules and information devices of robots. Textbook / Alimova N.B. - Tashkent, 2023, 215 pages.
9	Electronics and microprocessor systems. Textbook / Abdullayev M.M., Alimova N.B. Tashkent, 2023. 270 pages
10	Basics of automation of production processes. Teaching materials. Tashkent, 2023
11	Basics of machine elements and automatic design. Teaching materials. Tashkent, 2023
12	Computer programming I. Teaching materials, Tashkent, 2023
13	Computer programming II. Teaching materials, Tashkent, 2023
14	Embedded systems. Teaching materials, Tashkent, 2023
15	Fundamentals of Microcontroller Programming. Lectures, Karshi, 2023
16	Fundamentals of artificial intelligence. Lectures, Karshi, 2023

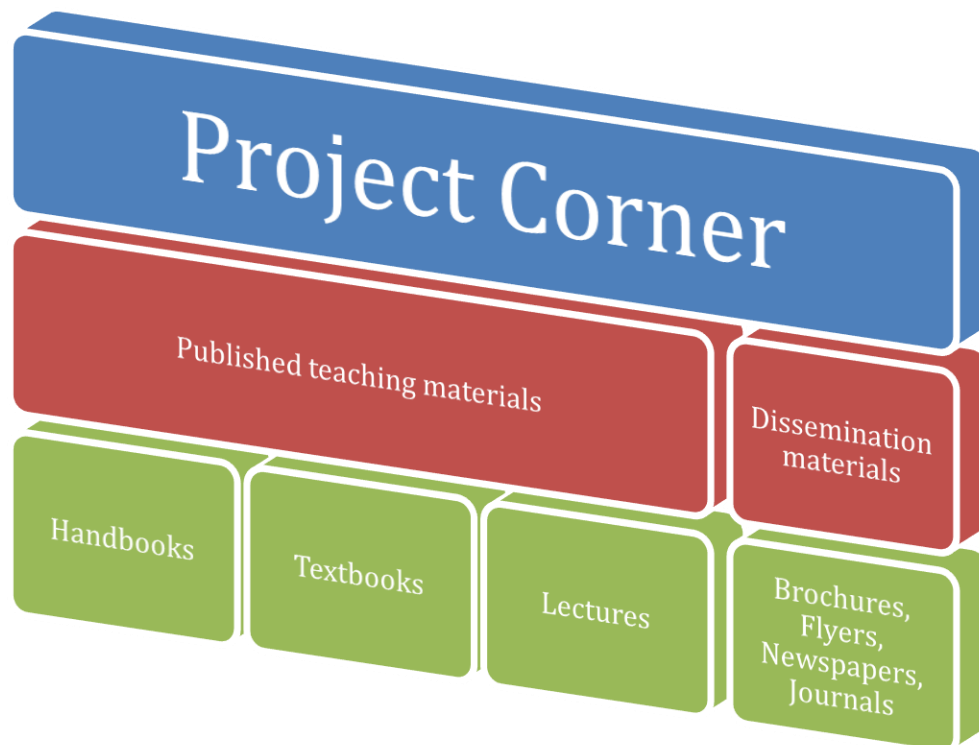
Table_4: List of developed teaching materials

Developed all [teaching materials](#) are in Uzbek language.

Establishment of project corner in partner HEIs in Uzbekistan

The main aim of the establishment of **“Project corner”** at all partner HEIs in Uzbekistan is help us to promote the impact of the project. Establishment of the project corner is one of the unplanned activities, but it was supported by all project partners.

Project corners is structured following scheme:



By the end of the project 6 MechaUz project corners were established at all uzbek partners.