# MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE KHMELNYTSKYI NATIONAL UNIVERSITY

## APPROVED

by the Academic Board of Khmelnytskyi National University Minutes of 31.08.2023 № <u>2</u>

Head of the Academic Board

Signature

Mykola SKYBA Name, surname

### EDUCATIONAL AND PROFESSIONAL PROGRAM Type of the educational program ARCHITECTURE AND URBAN PLANNING

Name of the educational program

## HIGHER EDUCATION LEVEL

First (Bachelor's)

**PROGRAM SUBJECT AREA** 

<u>191 – Architecture and urban planning</u> Code and name

**FIELD OF STUDY** 

# <u>19 – Architecture and urban planning</u> Code and name

# EDUCATIONAL QUALIFICATION

Minutes of 19.06.2017 №17

**AMENDMENTS MADE:** 

**APPROVED** 

Bachelor of Architecture and urban planning Name

### The educational program with amendments is put into force from 01.09.2023

Order of 31.08.2023 № 32

Rector Signature Serhii MATIUKH Name, surname

### Decision of the Academic Board of KhNU Minutes of 26.08.2020 №1

by the Academic Board of KhNU (First edition)

Decision of the Academic Board of KhNU Minutes of 30.08.2021 №1

Khmelnytskyi 2023

### **SUBMITTED**

# **PROJECT GROUP**

### Department of the Architecture and urban planning

Minutes of 20 July 2023  $N_{2}$  12

Acting Department Chair\_ Signature

Heorhii NEHAI Name, surname

**Guarantor** (Head of the project group) Heorhii NEHAI, PhD in

Architecture, Assoc. Prof. Name, surname, academic degree, title Signature

bahriio@khmnu.edu.ua E-mail of the guarantor

Members of the project group:

	<u>Olena Konoplova, PhD in</u>
Signature	Architecture, Assoc. Prof. Name, surname, academic degree, title
	Nataliia Mashovets, PhD in
Signature	<u>Technical Sciences, Assoc. Prof.</u> Name, surname, academic degree, title
	Olena Bahrii, PhD in Technical
Signature	Sciences, Assoc. Prof. Name, surname, academic degree, title

# **APPROVED:**

Academic Board of the Faculty of Engineering,	Educational and Methodological Department
Transport and Architecture	
Minutes of 30 August 2023 № 1	Head Larysa LIUBOKHYNETS Signature Name, surname
	Educational Department
Head of the Academic Board	-
	Head Oleh SAMOLIUK
Viktor OLEKSANDRENKO	Signature Name, surname
Signature Name, surname	
	Department for Higher Education Quality
	Assurance
	Head Hanna KRASYLNYKOVA Signature Name, surname
	Signature Name, surname

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LETTER OF APPROVAL

Head <u>of the Department of Urban Planning and Architecture of the Khmelnytskyi</u> Regional State Administration

Name of the organization (enterprise)

Iryna DUNAIEVSKA

Name, surname

Head of the Student Council of the Faculty of <u>Engineering, Transport and Architecture</u> Name

Nam

Signature

Signature

Ihor HORBACHUK Name, surname

Head of the Department of Architecture, Urban Development and Land Resources of <u>Khmelnytskyi City Council</u> Name of the organization (enterprise)

Signature

Maksym DRUZHYNIN Name, surname

Director <u>of the INNOVA-D LLC</u> Name of the organization (enterprise)

**Dmytro SHEVCHUK** 

Name, surname

Signature

# Educational program profile for the program subject area

# 191 Architecture and urban planning Code and name

1. General information									
Full name of the higher	Khmelnytskyi National University								
education institution and	Faculty of Engineering, Transport and Architecture								
structural unit	Department of Architecture and Urban Planning								
Higher education level	Bachelor's								
Name of the	Bachelor of Architecture and Urban Planning								
educational									
qualification									
Official name of the	Educational and professional program "Architecture and Urban Planning"								
educational									
program									
Diploma type	Bachelor's diploma, single, educational program volume 240 ECTS credits,								
and educational	term of study – 3 years 10 months								
program volume									
Accreditation	National Agency for Higher Education Quality Assurance, Certificate								
	(№1802, 22.06.2021) – valid until 01.07.2026								
Cycle/Level	NQF – Level 6; FQ-EHEA – First Cycle; EQF LLL – Level 6								
Prerequisites	Availability of complete general secondary education								
Language(s) of teaching	Ukrainian								
Term of the	Until the next update, not exceeding the accreditation period								
educational	Onth the next update, not exceeding the accreditation period								
program									
Permanent web page of									
the educational program	https://khmnu.edu.ua/191-am-b-op/								
	2. The purpose of the educational program								
Training of creative persona	lities, specialists capable of solving complex and specialized problems in the								
	architecture using modern theoretical and methodological approaches in								
architecture and related field									
	3. Characteristics of the educational program								
Subject Area(Field									
of Study, Program	19 Architecture and construction;								
Subject Area,	191 Architecture and urban planning								
Specialization (if	1917 Mondoorare and aroun planning								
available))									
Orientation of the	Educational and professional program								
educational program									
The main focus of the	Special education in architecture and construction with a degree in								
educational program	architecture and urban planning.								
and specialization	Keywords: architectural design of buildings, settlements, complexes,								
	environmental design, architectural composition, building structures,								
	reconstruction.								
	The emphasis is on developing a professional approach to solving design								
	problems in architecture and urban planning, namely: conducting pre-								
	design analysis, formulating a concept, justifying a design solution, in								
	accordance with the current requirements of global, national and regional								
	architectural practice.								

Features of the program	Integration of artistic-compositional and engineering-technical training
reatures of the program	with the systematic implementation of the acquired knowledge into the
	practice of architectural design of specific objects.
<b>4</b> Suitability of gr	aduates for employment and further training
Suitability for	In the fields of urban planning, architecture and construction.
employment	A graduate of a bachelor's degree after successful completion of the
empioyment	educational program is able to perform professional work as a specialist in
	accordance with the National Classification of Ukraine: Classifier of
	Occupations (ДК 003:2010) to hold a primary position by category:
	2141.2 Architect;
	2141.2 Architects and urban planners;
	2213.2 Specialist in landscape design;
	2442.2 Specialist in urban and district planning.
Further training	The right to continue studying at the second (master's) level of higher
0	education and/or to acquire additional qualifications in the postgraduate
	education system.
	5. Teaching and evaluation
Teaching and	The following technologies are used in teaching and learning: <i>Traditional</i>
learning	(explanatory and illustrative); <i>active</i> (problem-based, interactive, project-
B	based, information and computer-based, self-development, game-based,
	situational).
	Forms of education: classes (lectures, practical classes, laboratory classes,
	individual classes, consultations), independent work, individual
	assignments (course projects, calculation and graphic works, practice
	reports), practical training, layout, modelling of architectural forms using
	computer programs.
Evaluation	Assessment of students' learning outcomes is carried out in accordance with
	the "Regulations on the control and assessment of learning outcomes of
	higher education students at KhNU" according to the institutional scale and
	the ECTS scale. The current control is carried out during classroom classes
	in the form of oral questioning and testing, defence of laboratory works,
	reports, etc.; defence of calculation and graphic works, individual tasks. The
	main types of semester assessment are exams and tests (including
	differentiated ones), which are conducted orally or in writing, and the
	defence of term papers (projects). The final control is the defence of a qualification work (architectural project).
	6. Program competencies
Integral	<b>IC.</b> Ability to solve complex, specialized tasks and practical problems in
competence	the field of urban planning and architecture, characterized by complexity
competence	and uncertainty of conditions, based on the application of modern
	architectural theories and methods, in means of related sciences.
General	GC 01. Knowledge and understanding of the subject area and
competencies (GC)	understanding of professional activities.
• ` '	GC 02. Ability to identify, formulate and solve problems.
	GC 03. Ability to adapt and act in a new situation.
	GC 04. Ability to communicate in the state language both orally and in
	writing.
	GC 05. Ability to communicate with representatives of other professional
	groups of different levels (experts from other fields of knowledge/ types of
	economic activity). <b>GC 06.</b> Ability to act on the basis of ethical considerations (motives).
	<b>GC 07.</b> Ability to make informed decisions.
	GC 08. Interpersonal skills.

	CC 09 Ability to everyise one's rights and reaponsibilities as a member of
	<b>GC 09.</b> Ability to exercise one's rights and responsibilities as a member of
	society, to understand the values of civil (free democratic) society and the
	need for its sustainable development, the rule of law, human and civil
	rights and freedoms in Ukraine.
	GC 10. Ability to preserve and increase moral, cultural, scientific values
	and achievements of society based on an understanding of the history and
	patterns of development of the subject area, their place in the general
	system of knowledge about nature and society and in the development of
	society, technology and technology, to use various types and forms of
	physical activity for active recreation and healthy lifestyle.
Special (professional,	PC 01. Awareness of the socio-economic and cultural aspects of
subject) competencies	architecture and urban planning.
( <b>PC</b> )	PC 02. Ability to apply theories, methods, and principles of physical,
	mathematical, natural sciences, computer, and technology to solve
	complex, specialized problems of architecture and urban planning.
	<b>PC 03.</b> Understand the peculiarities of the development of historical and
	contemporary styles in architecture, urban planning, art and design in
	Ukraine and foreign countries.
	PC 04. Ability to comply with the requirements of legislation, building
	codes, standards and rules, technical regulations, and other regulatory
	documents in the areas of urban planning and architecture in the course of
	new construction, reconstruction, restoration, and overhaul of buildings
	and structures.
	PC 05. Ability to analyse and evaluate the natural and climatic,
	environmental, engineering, technical, socio-demographic, architectural
	and urban planning conditions of architectural design.
	<b>PC 06.</b> Ability to perform technical and artistic images for use in architectural and urban planning architectural and landscape design
	architectural and urban planning, architectural and landscape design.
	<b>PC 07.</b> Understanding of the basic laws and principles of architectural and urban planning composition, the formation of an artistic image and style in
	the process of designing buildings and structures, urban planning,
	architectural, environmental and landscape objects.
	<b>PC 08.</b> Understanding of the theoretical and methodological foundations
	of architectural design of buildings and structures, urban planning,
	architectural, environmental and landscape objects.
	<b>PC 09.</b> Ability to develop architectural and artistic, functional, space-
	planning and constructive solutions, as well as to make drawings, prepare
	documentation for architectural and urban planning projects.
	<b>PC 10.</b> Ability to participate in the preparation of architectural and
	planning tasks for design, in the organization of the development of
	architectural and urban planning, architectural, environmental and
	landscape projects.
	PC 11. Ability to work effectively in a team, as well as to cooperate with
	clients, suppliers, other partners and the public in the development,
	approval and public discussion of architectural projects.
	PC 12. Understand the peculiarities of using different types of structural
	and engineering systems and networks, their calculations in architectural
	and urban planning design.
	PC 13. Ability to develop architectural and urban planning solutions taking
	into account safety, sanitary and hygienic, engineering, technical and
	energy-saving, technical and economic requirements and calculations.
	PC 14. Understanding the peculiarities of using modern building materials,
	products and structures, as well as technologies in the creation of urban
	planning, architecture and construction objects.
	PC 15. Ability to carry out computer modelling, visualization, layout, and
	preparation of visual illustrative materials for architectural and urban
	planning projects.
	panning projects.

	PC 16. Understanding of the general theoretical, methodological and										
	creative principles of architectural design.										
	PC 17. Understanding of the theoretical foundations of urban planning										
	and the ability to apply them to solve complex, specialized problems.										
	PC 18. Awareness of the theoretical foundations of the architecture of										
	buildings and structures, the basics of reconstruction, restoration of										
	architectural objects and the ability to apply them to solve complex,										
	specialized problems.										
	<b>PC</b> 19. Ability to apply the theoretical foundations of architectural										
	environment design to solve complex, specialized problems.										
	PC 20. Ability to apply the theoretical foundations of landscape										
	architecture to solve complex, specialized problems.										
Defined by the	PC 21. Ability to take into account regional architectural features										
educational program	when solving professional design problems.										
	7. Program learning outcomes (PLO)										

**PLO 01.** Communicate fluently on professional issues in the state and foreign languages orally and in writing.

**PLO 02.** Know the basic principles of architectural and urban planning activities.

**PLO 03.** Apply theories and methods of physical, mathematical, natural, technical and human sciences to solve complex, specialized problems of architecture and urban planning.

**PLO 04.** Assess the factors and requirements that determine the prerequisites for architectural and urban design.

**PLO 05.** Apply the basic theories of design, reconstruction, and restoration of architectural and urban planning, architectural, environmental and landscape objects, modern methods and technologies, international and domestic experience to solve complex, specialized problems of architecture and urban planning.

**PLO 06.** Collect, analyse and evaluate information from various sources necessary to make informed design, architectural and urban planning decisions.

**PLO 07.** Apply software tools, IT technologies and Internet resources to solve complex, specialized problems of architecture and urban planning.

PLO 08. Know the regulatory framework for architectural and urban design.

**PLO 09.** Develop projects, carry out pre-project analysis in the process of architectural and urban planning design, taking into account goals, resource constraints, social, ethical and legal aspects.

**PLO 10.** Apply modern means and methods of engineering, artistic and computer graphics used in architectural and urban planning design.

PLO 11. Apply artistic and compositional principles in architectural and urban design.

**PLO 12.** To apply modern theoretical, methodological and typological approaches to solving problems of formation and development of architectural, urban and landscape environment.

**PLO 13.** Identify, analyse and evaluate the needs and requirements of clients and partners, find effective joint solutions for architectural and urban planning projects.

**PLO 14.** Choose rational architectural solutions based on the analysis of the effectiveness of structural, engineering and technical systems, building materials and products, and decorative and finishing materials.

**PLO 15.** Ensure compliance with sanitary and hygienic, engineering, technical, economic, and safety regulatory requirements in architectural and urban planning design.

**PLO 16.** Understand the socio-economic, environmental, ethical and aesthetic implications of proposed urban planning and architecture solutions.

**PLO 17.** Apply energy-efficient and other innovative technologies in the design of architectural objects.

PLO 18. Know the specifics of participation in architectural and urban design competitions.

**PLO 19.** Organize presentations and discussions of architectural, urban and landscape environment projects.

### Defined by the educational program

**PLO 20.** Associate oneself as a member of civil society, scientific community, define the rule of law, in particular in professional activities understand and be able to use one's own rights and freedoms show respect for the rights and freedoms of others, in particular team members.

**PLO 21.** To reproduce moral, cultural, and scientific values, to multiply the achievements of society in the socio-economic sphere, and to promote a healthy lifestyle.

**PLO 22.** Identify and analyse the architectural features of the Podillia region, skilfully applying them in the architectural and urban planning environment and in the decoration of recreational areas.

8. Resource support for program implementation								
	Educational activities should be carried out by academic staff of the							
	relevant speciality at the main place of work, of which at least 50% have a							
	scientific degree and/or academic title.							
	All academic staff providing the educational and professional program ar							
	qualified in accordance with the profile and direction of the disciplines							
Staffin a	taught, have the necessary teaching experience and practical experience.							
Staffing	In the process of organizing the educational process, professionals with							
	experience in research, management, innovation, creative work and work							
	in their speciality are involved.							
	The material and technical support allows us to fully ensure the							
	educational process throughout the entire cycle of training under the educational program:							
	- specialized laboratories for architectural design, composition and							
	modelling, drawing and painting;							
Material and technical	- computer classrooms;							
support	- multimedia equipment;							
	- scientific library, reading rooms.							
	The condition of the premises is certified by sanitary and technical							
	passports that comply with existing regulations.							
	The information and educational and methodological support of the							
	educational program complies with the current Licensing Conditions for							
	the conduct of educational activities.							
	Information support is based on the use of the following resources:							
Information and educational	- official website of KhNU: https://khmnu.edu.ua/;							
and methodological support	- wireless Internet access points;							
	- unlimited Internet access;							
	- modular learning environment: <u>https://msn.khmnu.edu.ua/;</u>							
	- educational program;							
	- training and work curricula;							
	- work programs of disciplines;							
	- didactic materials for independent and individual work in the disciplines;							
	- practice programs;							
	- methodological instructions for the implementation of course projects							
	(works), graphic works, creative works, bachelor's qualification work							
	(architectural project);							
	- criteria for assessing learning outcomes.							

9. Academic mobility										
National credit mobility	On a general basis within Ukraine. On the basis of bilateral agreements between KhNU and educational institutions of Ukraine. (Concluded cooperation agreements: Vinnytsia National Technical University, Central Ukrainian National Technical University, Ternopil Ivan Puluj National Technical University)									
International credit mobility	On the basis of bilateral agreements between Khmelnytskyi National University and partner higher education institutions of foreign countries. (Concluded cooperation agreements: Bydgoszcz University of Science and Technology, Poland; Lublin University of Technology, Poland)									
Training of foreign students of higher education	Not provided.									

# II. List of educational program components and their logical sequence

# 2.1. List of educational program components

Code CEP	Components of the educational program (CEP) (academic disciplines, course projects (works), practice, qualification work)	Number of ECTS credits	Form of final control	Semester							
1	2	3	4	5							
MAND	MANDATORY COMPONENTS OF THE EDUCATIONAL PROGRAM										
General training (MGT)											
MGT.01	Higher Mathematics	4	exam	1							
MGT.02	Foreign Language	5	test, exam	1 2							
MGT.03	Ukrainian state-building and European values	4	test	2							
MGT.04	Cultural Studies and Speech Culture	4	test	1							
MGT.05	Philosophy (including logic, ethics, aesthetics)	4	test	5							
MGT.06	Urban planning legislation	4	exam	7							
MGT.07	Physical education and the basics of health	4	test	2							
	Professional training (N	(IPT)									
MPT.01	Descriptive geometry and construction drawing	7	test, exam	1 2							
MPT.02	Drawing, painting	9	test	1, 3							
MPT.03	Basics of composition and modelling of architectural forms	9	test, exam	1, 2 3							
MPT.04	Basics of architectural design and architectural graphics	10	test	1, 2							
MPT.05	History of art, architecture and urban planning	8	test, exam	2 1, 3							
MPT.06	Basics of structural theory	7	exam	3							
MPT.07	Building physics	5	exam	6							
MPT.08	Design of the architectural environment	5	exam	7							
MPT.09	Architectural design	26	test CP	4,5,6 3,4,6							
MPT.10	Architectural structures	9	exam, CW	4 5							

MPT.11	Typology of buildings and structures	4	exam	5
MPT.12	Economics of architectural and construction activities	4	exam	8
MPT.13	Basics of computer graphics and architectural design applications	7	test	2, 3
MPT.14	Building structures	7	exam	5,6
MPT.15	Modern architecture	4	exam	7
MPT.16	Basics of reconstruction and restoration of buildings and structures	4	test	7
MPT.17	Architectural and urban planning design	7	CP, test	7 8
MPT.18	Introductory and measuring practice	3	differentiated test	3
MPT.19	Graphic practice	2	differentiated test	5
MPT.20	Geodetic practice	2	differentiated test	5
MPT.21	Production practice	2	differentiated test	7
MPT.22	Pre-diploma practice	3	differentiated test	8
MPT.23	Qualification work (architectural project)	7	DP	8
	Total volume of mandatory components	180		
SELE	CTIVE COMPONENTS OF THE EDUCATION	VAL PROGI	RAM	
	Selective courses of the 3rd semester	4	test*	3
	Selective courses of the 4th semester	16	test*	4
	Selective courses of the 5th semester	4	test*	5
	Selective courses of the 6th semester	16	test*	6
	Selective courses of the 7th semester	8	test*	7
	Selective courses of the 8th semester	12	test*	8
		12	test*	8

\* - the number of tests depends on the student's choice of free choice courses

### 2.2. Structural and logical scheme of the educational program

The description of the logical sequence of studying the components of the educational program is presented in the form of a graph (fig.1):

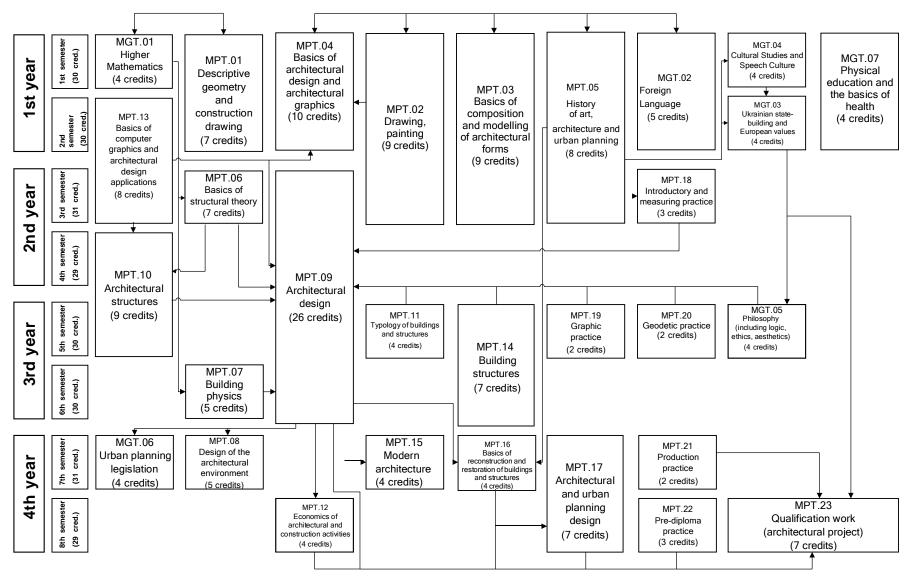


Fig.1. Logical sequence of studying the components of the educational program

Form of attestation of higher education students	Attestation is carried out in the form of a public defence of the qualification work.
<b>Requirements for qualification</b>	The qualification work involves solving a complex, specialized
work	creative task or practical problem in the field of architecture and
	urban planning. The qualification work is an architectural project
	with an explanatory note. The qualification work must not contain
	academic plagiarism, falsification, or fabrication. The
	qualification work is published in the institutional repository of
	Khmelnytskyi National University.

### **III.** Forms of attestation of higher education students

### **IV.** Requirements for an internal quality assurance system for higher education

The system of internal quality assurance of educational activities and the quality of higher education (internal quality system) at the university meets the requirements of European standards and recommendations for quality assurance of higher education (ESG), 16 Article of the Law of Ukraine "On Higher Education" (as amended). The internal quality assurance system operates at the university at five organizational levels in accordance with the Regulations on the internal quality assurance system of educational activities and higher education at Khmelnytskyi National University: https://tinyurl.com/46sxryfh.

The internal quality assurance system involves the following procedures and measures:

- 1) defining the principles and procedures for quality assurance in higher education;
- 2) monitoring and periodic review of educational programs;
- 3) annual examination of students and academic staff of the University and regular publication of the results of such examination on the official website of the University, on information stands and in any other way;
- 4) supervising the implementation (evaluating the effectiveness) of professional development plans for academic staff;
- 5) monitoring (availability of necessary) resources for the organization of the educational process, including independent work of students, for each educational program;
- 6) analysing the state of the information system, its effectiveness for managing the educational process;
- 7) collecting information on ensuring (assessing the level of) publicity of information on educational programs, degrees of higher education and qualifications;
- 8) promoting an effective (tracking the effectiveness of functioning) system for preventing and detecting academic plagiarism in the scientific works of university staff and students, etc.;
- 9) development of recommendations for improving the quality of educational activities and the quality of higher education, participation in strategic planning, etc.

# V. Matrix of compliance of program competencies with the components of the educational program

	MGT.01	MGT.02	MGT.03	MGT.04	MGT.05	MGT.06	MGT.07	MPT.01	MPT.02	MPT.03	MPT.04	MPT.05	MPT.06	MPT.07	MPT.08	MPT.09	MPT.10	MPT.11	MPT.12	MPT.13	MPT.14	MPT.15	MPT.16	MPT.17	MPT.18	MPT.19	MPT.20	MPT.21	MPT.22	MPT.23
IC	+	+	<u> </u>	+	-	+	+		+	+	+	+	_∠ +	+	+	<u>-</u>	+	+	+	<u>-</u>	+	<u> </u>	+	<u>v</u> +	+	4	4	+	4	+
GC.01	+	-			+						+	+			+	+			+			+		+	+	+	+	+	+	+
GC.02	+			+	+						+					+								+	+	+	+	+	+	+
GC.03					+																	+			+	+	+	+	+	+
GC.04				+							-		-						-					-	+	+	-	+	+	+
GC.05		+		+															+									+	+	+
GC.06					+																									+
GC.07					+										+				+						+	+		+	+	+
GC.08			+	+	+																				+	+	+	+	+	
GC.09			+	+	+																									
GC.10			+	+	+		+								+							+			+	+	+	+	+	+
PC.01		+	+												+				+			+							+	+
PC.02	+												+	+						+								+	+	+
PC.03											+	+			+	+						+		+	+	+			+	+
PC.04						+					+		+	+					+				+		+	+		+	+	+
PC.05														+														+	+	+
PC.06								+	+			+			+					+			+		+	+				+
PC.07									+	+	+	+			+	+						+		+	+	+		+	+	+
PC.08											+		+	+		+		+						+				+	+	+
PC.09								+		+	+					+							+	+	+			+	+	+
PC.10											+					+			+					+					+	+
PC.11						+					+					+			+					+	+	+		+	+	+
PC.12																	+	+			+							+	+	+
PC.13						+								+					+									+	+	+
PC.14														+			+	+			+							+	+	+
PC.15											+				+	+				+				+					+	+
PC.16											+				+							+			+	+		+	+	+
PC.17																													+	+
PC.18																		+			+		+		+	+		+	+	+
PC.19										+	+				+	+								+		+			+	+
PC.20											+					+							+	+	+	+			+	+
PC.21									+	+	+	+			+	+						+	+	+	+	+	+	+	+	+

VI. Matrix of providing the program learning outcomes (PLOs) with the relevant components of the educational program

	MGT.01	MGT.02	MGT.03	MGT.04	MGT.05	MGT.06	MGT.07	MPT.01	MPT.02	MPT.03	MPT.04	MPT.05	MPT.06	MPT.07	MPT.08	60.TYM	MPT.10	MPT.11	MPT.12	MPT.13	MPT.14	MPT.15	MPT.16	MPT.17	MPT.18	MPT.19	MPT.20	MPT.21	MPT.22	MPT.23
PLO 01		+		+	+																				+	+	+	+	+	+
PLO 02						+					+	+				+	+	+				+	+	+	+	+	+	+	+	+
PLO 03	+		+	+				+	+	+			+	+							+							+	+	+
PLO 04			+						+		+			+		+	+	+						+	+	+	+	+	+	+
PLO 05																	+	+			+	+	+		+	+	+	+	+	+
PLO 06									+		+	+				+	+	+				+	+	+	+	+	+	+	+	+
PLO 07											+				+	+				+				+	+	+	+	+	+	+
PLO 08						+					+					+	+	+					+	+				+	+	+
PLO 09						+					+					+			+					+	+			+	+	+
PLO 10								+			+				+					+			+			+			+	+
PLO 11										+	+	+			+	+						+		+		+			+	+
PLO 12										+								+										+	+	+
PLO 13															+		+		+										+	+
PLO 14													+	+			+				+		+					+	+	+
PLO 15						+			+		+					+	+		+					+				+	+	+
PLO 16												+			+		+	+	+			+	+						+	+
PLO 17														+			+	+			+							+	+	+
PLO 18									+							+								+	+	+	+	+	+	+
PLO 19				+							+					+	+							+	+	+	+	+	+	+
PLO 20		+	+	+																										+
PLO 21			+				+					+			+				+			+								+
PLO 22										+	+	+			+	+						+	+	+	+	+	+	+	+	+

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