MINISTRY OF EDUCATION AND SCIENCE

KYIV NATIONAL UNIVERSITY OF TECHNOLOGIES AND DESIGN

APPROVED BY THE ACADEMIC COUNCIL

Chairman of the Academic Council of KNUTD

_____ Ivan GRYSHCHENKO

(protocol of April 28, 2021 № 9)

EDUCATIONAL-SCIENTIFIC PROGRAM

INDUSTRIAL PHARMACY

Degree of higher education third (educational-scientific)

Level of higher education doctor of philosophy

Field of knowledge 22 Healthcare

Specialty 226 Pharmacy, industrial pharmacy

Qualification Doctor of Philosophy (PhD) in Pharmacy, Industrial Pharmacy

Kyiv - 2021

LETTER OF AGREEMENT

Educational-Scientific Program

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Vice-Rector for Scientific and Pedagogical Activity (Educational Activity)

27.04.2021 _____ **Oksana Morhulets**

Approved by the Academic Council of the Faculty of Chemical and Biopharmaceutical Technologies

Protocol of April 19, 2021 № 9

Dean of the Faculty _____ Chemical and Biopharmaceutical Technologies

April 19, 2021 _____ **Olga BAULA**

Head of the Department of Doctoral and Postgraduate Studies_____

April 19, 2021 _____ **Svetlana ARABULI**

Discussed and recommended at the meeting of the graduating department:

Protocol of April 19, 2021 № 9

Head of the Department of Industrial Pharmacy

April 19, 2021 _____ **Vladislav STRASHNYI**

Protocol of April 19, 2021 № 9

Guarantor of the educational program _____ **Vladislav STRASHNYI**

Entered into force by order of KNUTD "19" May 2021 № 131

PREFACE

DEVELOPED: Kyiv National University of Technologies and Design

DEVELOPERS:

Guarantor of the educational program DIKHTIAROV Serhii Ivanovych, Doctor of Pharmaceutical Science, Professor, Kyiv National University of Technologies and Design

Members of the working group:

STRASHNYI Vladislav Volodymyrovych, Doctor of Pharmaceutical Science, Professor, Head of Industrial Pharmacy Department, Kyiv National University of Technologies and Design

BESSARABOV Volodymyr Ivanovych, PhD., Associate Professor of Industrial Pharmacy Department, Kyiv National University of Technologies and Design;

KUZMINA Galyna Ivanivna, PhD., Associate Professor of Industrial Pharmacy Department, Kyiv National University of Technologies and Design;

SUR Serhii Volodymyrovych, Doctor of Pharmaceutical Science, Director of Arterium Ltd;

ZDERKO Nazar Petrovych, graduate student of Industrial Pharmacy Department, Kyiv National University of Technologies and Design.

REVIEWS OF EXTERNAL STAKEHOLDERS:

1) Gureeva S.M, Head of the Department of Technological Development of the Research and Development of JSC "Farmak";

2) Saliy O.O, General Director of BioTestLab LLC;

3) Kryshtal O.O, Director of Bogomoletz Institute of Physiology, National Academy of Sciences of Ukraine;

4) Calafat K.V, Director of Kovlar Group LLC;

5) Raenko G.F, Deputy Director for Research at L.M. Litvinenko Institute of Physical-Organic Chemistry and Coal Chemistry, the National Academy of Sciences of Ukraine

1. Profile of the educational - scientific program Industrial Pharmacy

1 – Загальна інформація	
Full name of the institution of higher education and structural unit	Kyiv National University of Technologies and Design, Department of Industrial Pharmacy.
Degree of higher education and qualification in the original language	Level of higher education - third (educational and scientific). Degree of higher education - Doctor of Philosophy. Field of knowledge - 22 Healthcare. Specialty - 226 Pharmacy, industrial pharmacy.
Type of diploma and scope of educational program	Doctor of Philosophy, single, 48 ECTS credits.
Availability of accreditation	-
Cycle / level	National Qualifications Framework of Ukraine - Level 8.
Prerequisites	Master's degree or educational qualification level of a specialist.
Language(s) of teaching	Ukrainian
The term for educational programs	-
Internet-addresses of permanent placement of the description of the educational program	http://knutd.edu.ua/ekts/
2 – Purpose of the educational program	
Training of doctors of philosophy in the specialty 226 Pharmacy, industrial pharmacy, who have deep knowledge, as well as basic and professional competencies in pharmacy, industrial pharmacy and able to generate new ideas, solve complex problems of professional research and innovation activities, involving deep rethinking existing and creation of new holistic knowledge and professional activities. *The main objectives of the program* are: acquisition of theoretical and practical knowledge, skills and other competencies, which are sufficient for professional research and innovation activities in the field of pharmacy, industrial pharmacy, scientific and pedagogical activities, as well as for conducting their own research, the results of which have scientific novelty, theoretical and practical significance.	
3 – Characteristics of the educational program	
Subject area	The program is designed as an optimal combination of academic and professional requirements. Focused on the formation of applicant's competences to acquire in-depth knowledge of the specialty, general scientific (philosophical) competencies, the acquiring universal skills of a researcher and presenting their own research results orally and in writing, in particular, in a foreign language Compulsory educational components - 75%, of which: professional training - 44%, general training - 34%, knowledge of a foreign language - 22%, disciplines of free choice of the applicant, providing professional training - 25% are selected from the general university catalog respectively to the approved procedure at the University
Orientation of the program	Educational and scientific orientation for the preparation of a doctor of philosophy
Main focus of the program	The emphasis is on the formation and development of professional competencies in scientific and practical research in the field of pharmacy, industrial pharmacy; the study of theoretical and methodological provisions, organizational and practical tools that are sufficient for the appearance of new ideas, solving of complex problems in pharmacy, industrial pharmacy, research and innovation, mastering of the methodology of scientific and pedagogical activities

Features of the program	The program is based on the study and mastery of modern methods of scientific research in pharmacy, industrial pharmacy and related specialties in accordance with the theme of the scientific project, on in-depth study of the specialty in the selected scientific research, on the development of language competencies and communication skills, on acquiring the ability to use presentation technologies and other competencies for carring out original scientific research and implement scientific results.	
4 – Suitability of graduates for employment and further study		
Suitability for employment	The graduate is suitable for employment in enterprises, companies, organizations and institutions operating in the pharmaceutical industry, performing the relevant functions of a professional in industrial pharmacy; in research institutes, research centers and institutions of higher education, holding the positions of scientific and teaching staff, researcher.	
Further training	Lifelong learning to improve professional, scientific and other activities. Opportunity to continue education at the scientific level of higher education (doctor of sciences).	
5 – Викладання та оцінювання		
Teaching and learning	The model provides for active postgraduate training, including training through research. Student-centered model of learning, self-study, problem-oriented learning is used. The system of methods of problem-based learning is based on the principles of purposefulness, binary (direct interaction of teacher and graduate student). It consists of interactive teaching methods aimed at stimulating analytical and creative abilities, the ability to generate ideas, create concepts, develop research projects aimed at gaining new knowledge in the field of pharmacy and industrial pharmacy as well as methods of computer forecasting and experiment planning; data analysis methods; chemical and physico-chemical methods of analysis; biopharmaceutical, pharmaco-technological, pharmacological methods; methods of statistical data processing. Forms of organization of the educational process: lecture, seminar, practical classes, practical training, independent work, consultation, development of professional projects (scientific research).	
Assessment	Exams, tests, research projects, presentations, reports.	
6 – Program competencies		
Integral competence (IC)	Ability to produce new ideas, to solve complex problems of professional and / or research and innovation activities in the field of pharmacy, industrial pharmacy; to apply the methodology of scientific and pedagogical activities, as well as, to conduct their own research, the results of which have scientific novelty, theoretical and practical significance	
General competencies (GC)	GC 1	Ability to abstract thinking, analysis and synthesis.
	GC 2	Ability to develop and manage projects.
	GC 3	Ability to generate new ideas (creativity).
	GC 4	Formation of a systemic scientific / artistic worldview, professional ethics and general cultural horizon.
	GC 5	Ability to communicate in a foreign language.
	GC 6	Ability to use information and communication technologies.
	GC 7	Ability to work in an international context.
Professional competencies (PC)	PC 1	Ability to carry out scientific and pedagogical activities.
	PC 2	Ability to perform original research, achieve scientific results that create new knowledge in pharmacy, industrial pharmacy and related interdisciplinary areas and can be published in

		leading scientific journals in pharmaceutical sciences and related fields
	PC 3	Ability to orally and in writing present and discuss the results of research and / or innovative developments in Ukrainian and foreign languages (English or other according to the specifics of the specialty), deep understanding of scientific texts in foreign languages in the field of research.
	PC 4	Ability to apply modern methodologies, methods and tools of pedagogical and scientific activities in the specialty, including modern information technology, databases and other electronic resources, specialized software.
	PC 5	Ability to identify, pose and solve research problems in the field of pharmacy and industrial pharmacy, to develop and implement comprehensive theoretical and experimental research, evaluate and ensure the quality of research.
	PC 6	Ability to generate new ideas and solve complex problems in the field of professional and / or research and innovation activities; including the initiating, the developing and the implementing of complex innovative projects in pharmacy and industrial pharmacy and related interdisciplinary projects.
	PC 7	Ability to adhere to the ethics of research, as well as the rules of academic integrity in research and scientific-pedagogical activities
	PC 8	Systematic scientific worldview and general cultural horizon.
7 – Program learning outcomes		
Knowledge and understanding:		
PLO 1	To have advanced conceptual and methodological knowledge in pharmacy and industrial pharmacy and on the borders of subject areas, as well as research skills that are sufficient to conduct scientific and applied research at the level of the latest world achievements in the relevant field, gaining new knowledge and / or implementing innovations.	
PLO 2	To have the knowledge and the understanding of general principles and the methods of pharmaceutical sciences, as well as, the methodologies of scientific, pedagogical and scientific activities for their application in their own research and teaching practice.	
Application of knowledge and understanding (skills):		
PLO 3	To be able to formulate and test scientific hypotheses; use appropriate evidence to substantiate the conclusions, in particular, the results of theoretical analysis, experimental research (surveys, observations, monitoring, etc.) and mathematical and / or computer modeling, available literature data; to plan and implement in practice an original independent scientific research that has scientific novelty, theoretical and practical value.	
PLO 4	To be able to develop and research conceptual, mathematical and computer models of processes and systems, effectively use them to gain new knowledge and / or create innovative products in pharmacy and related interdisciplinary areas.	
PLO 5	To be able to plan and to perform experimental and / or theoretical research on the technology of pharmaceuticals, pharmaceutical chemistry, pharmacognosy, standardization and organization of drug production and related interdisciplinary areas using modern tools; critically analyze the results of their own research and the results of other researchers in the context of the whole set of modern knowledge on the research problem.	
PLO 6	To be able to apply modern methods and tools, modern methodologies for search, processing and analysis of information in pedagogical and scientific activities, in particular, statistical methods of data analysis of large volumes and / or complex structures, specialized databases and information systems.	

PLO 7	To develop and to implement research and / or innovation projects that provide an opportunity to rethink existing and create new holistic knowledge and / or professional practice and to solve significant scientific problems in pharmacy in compliance with academic ethics and social, economic, environmental and legal aspects.
Formation of views:	
PLO 8	Ability to freely present and discuss with specialists and non-specialists the results of research, scientific and applied problems in pharmacy in Ukrainian and foreign languages, correctly analyze and competently reflect the results of research in scientific publications in leading international scientific journals.
8 – Resource support for program implementation	
Staffing	The qualification of the scientific and pedagogical staff that provides the educational and scientific program corresponds to the profile and direction of the disciplines included in the program. Teachers have the necessary experience of pedagogical work. The organization of the educational process involves foreign lecturers and domestic professionals with experience in research / management / innovation / creative activities.
Logistics	Logistics allows to fully ensure the educational process throughout the training cycle of the educational program. The condition of the premises is certified by sanitary passports that comply with current regulations.
Information and educational-methodical support	The program is fully provided with an educational and methodological complex of all components of the educational program, the availability of which is presented in the modular environment of the educational process of the University.
9 – Academic mobility	
National credit mobility	Provides for the possibility of national credit mobility in some training modules that provide the acquisition of general and professional competencies.
International credit mobility	The program develops prospects for participation and internships in research projects and academic mobility programs abroad. It performs in an active research environment. Student mobility is organized on the basis of a partnership agreement with foreign universities on participation in international educational programs, which provide an opportunity to gain additional knowledge in related fields of science; to improve the level of foreign language proficiency; to get acquainted with foreign culture, history; to receive a diploma from a foreign university.
Training of foreign applicants for higher education	Training of foreign applicants for higher education is carried out according to accredited educational programs.

2. The list of components of the educational-scientific program and their logical sequence

2.1 List of components of the educational-scientific program of the third (educational-scientific) level of higher education

Code	Components of the educational program (academic disciplines, semester work, practice)	Number of credits	Form of final control
1	2	3	4
Mandatory components of the EP			
General training cycle			
EC 1	Philosophy of science and research methodology	4	exam
EC 2	Foreign language for academic purposes	8	test/ exam

EC 3	Information and communication technologies in research	4	test
EC 4	Intellectual property and commercialization of scientific research	4	test
	Total	**20**	
	Cycle of professional training		
EC 5	Pedagogical skills in high school	4	test
EC 6	Technologies of active pharmaceutical ingredients. Theory of phenomena and processes	4	exam
EC 7	Theory of innovative technologies of pharmaceuticals	4	exam
EC 8	Pedagogical practice	4	test
	Total	16	
	Total amount of required components	**36**	
	Selective components of the EP		
DFChP	Disciplines of free choice of a postgraduate	12	test/ exam
	The total amount of sample components	**12**	
	TOTAL VOLUME OF THE EDUCATIONAL PROGRAM	**48**	

2.1.1 The content of the scientific component of the educational-scientific program of the third (educational-scientific) level of higher education

Search for scientific sources and their study. Defining the main tasks of the dissertation. Selection of optimal theoretical and / or experimental methods for their solution. Data generation, processing and analysis of the obtained results. Correction of initial hypotheses and problems in accordance with the results of the analysis. Preparation of scientific results for publication. Approbation of scientific results at scientific conferences of different levels. Generalization of research results. Final definition of the range of problems that will be considered in the dissertation, establishing the place of research in the context of the results of other authors. Formation of conclusions and recommendations. Registration of work and submission to the defense. Dissertation defense.

The scientific results of the dissertation must be covered in at least three scientific publications of the applicant. Such scientific publications include:

- at least one article in periodical scientific publications of other states that are members of the Organization for Economic Cooperation and Development and / or the European Union, in the scientific field for which the applicant's dissertation was prepared. Such publication may be equated with publication in publications included in the list of scientific professional publications of Ukraine with the assignment of category "A", or in foreign publications indexed in the Web of Science Core Collection and / or Scopus databases;

- the articles in scientific journals included in the list of scientific professional publications of Ukraine with the assignment of category "B" (instead of one article may be credited monograph or section of the monograph published in co-authorship).

A scientific publication in the first to third quartiles (Q 1 - Q 3) according to the SCImago Journal and Country Rank or Journal Citation Reports classification is equivalent to two publications that are credited according to the first paragraph of this paragraph.

Scientific publications are credited on the topic of the dissertation subject to the following conditions:

- substantiation of the obtained scientific results in accordance with the purpose of the article (task) and conclusions;

- publication of articles in scientific professional publications, which on the date of their publication are included in the list of scientific professional publications of Ukraine, approved in the manner prescribed by law;

- publication of articles in scientific periodicals of other states in the scientific field in which the applicant's dissertation was prepared, provided that the dissertation materials are complete, determined by the council;

- publication of no more than one article in one issue (issue) of a scientific publication.

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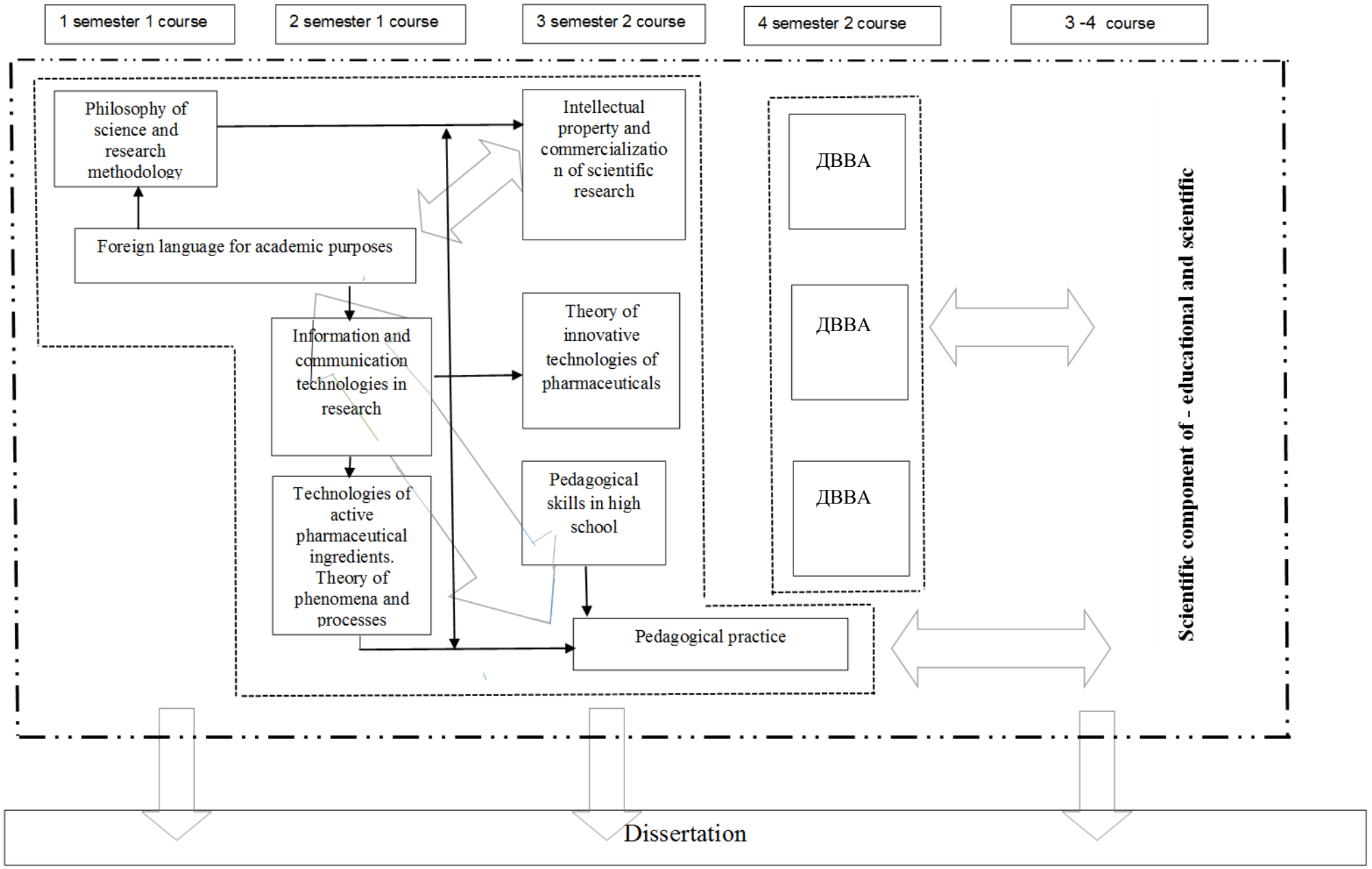
2.2 Structural and logical training scheme of the doctor of philosophy on the educational and scientific program Industrial pharmacy in specialty 226 Pharmacy, industrial pharmacy



3. Form of certification of applicants for higher education

Forms of certification of applicants for higher education	Attestation of the graduate of the educational program is carried out in the form of defense of the dissertation.
Document of higher education	Diploma of the degree of Doctor of Philosophy with the qualification: Doctor of Philosophy in Pharmacy, Industrial Pharmacy.

4. Matrix of correspondence of program competencies to the components of the educational program

	GC 1	GC 2	GC 3	GC 4	GC 5	GC 6	GC 7	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6	PC 7	PC 8
EC 1	*	*	*	*			*	*							*
EC 2		*			*	*	*		*						*
EC 3	*	*	*		*	*	*	*					*		
EC 4	*	*	*	*		*		*					*	*	
EC 5				*		*	*	*		*	*			*	
EC 6	*			*	*	*		*	*			*	*	*	*
EC 7	*			*				*	*			*	*	*	
EC 8				*		*	*	*		*	*			*	

5. Matrix for providing program learning outcomes with relevant components of the educational program

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
EC 1	*		*					
EC 2	*				*		*	*
EC 3		*	*			*		
EC 4			*	*				
EC 5		*			*		*	
EC 6	*	*		*	*	*	*	*
EC 7	*	*		*	*		*	*
EC 8		*			*		*	