

MINISTRY OF HEALTH OF UKRAINE
IVANO-FRANKIVSK NATIONAL MEDICAL UNIVERSITY

PROFFESIONAL EDUCATION PROGRAM

«MEDICINE»

Second (master) level of higher education

Field of knowledge 22 Healthcare

Specialty 222 Medicine

Educational qualification: Master of Medicine

Professional qualification: Doctor of Medicine

Edition 2020-4

APPROVED BY THE ACADEMIC COUNCIL
Chairman of the Academic Council Mykola ROZHKO
(Minutes no. 4 of March 28th, 2023)

Education Program comes into force on September 1st, 2023
Rector of IFNMU Mykola ROZHKO
(Order no. 421-д of March 29th, 2023)

Ivano-Frankivsk - 2023

LETTER OF APPROVAL
of Professional Education Program

Proposed for consideration:

Education Program Guarantor: *Roman YATSYSHYN* – Dr. habil. (Med), Professor of the Department of Internal Medicine no. 1, Clinical Immunology and Allergology named after Yevhen NEIKO, Dean of Medical Faculty.

Workgroup members:


1. *Taras KOBRYN* – PhD (Med), Associate Professor of the Department of Infectious Diseases and Epidemiology, Pro-rector for Science and Education and Medical Work;
2. *Andrii VOLOSIANKO* – Dr. habil. (Med), Professor, Head of the Department of Pediatrics;
3. *Nataliia HENYK* – Dr. habil. (Med), Professor, Head of the Department of Obstetrics and Gynecology named after Professor I.D. Lanovyi;
4. *Ivan HUDZ* – Dr. habil. (Med), Professor, Head of the Department of General Surgery;
5. *Oryna DETSYK* – Dr. habil. (Med), Professor, Head of the Department of Social Medicine and Public Health;
6. *Iryna KOSTITSKA* – Dr. habil. (Med), Professor of the Department of Endocrinology;
7. *Mykhailo MIZIUK* – Dr. habil. (Med), Professor, Head of the Department of Hygiene and Ecology.

Approved by:

Central Methodical Council of IFNMU

Minutes no. 3 of January 25th, 2023

Chairwoman of CMC



Hanna ERSTENIUK

PREFACE

Professional Education Program has been elaborated in accordance with requirements of Article 1 Item 17, Article 10 Item 3 and Article 29 of the Law of Ukraine “On Higher Education”, National Classifier of Ukraine: “Classifier of Professions” SC 003: 2010, Resolution of the Cabinet of Ministers no. 266 of April 29th, 2015 “On approval of the list of subject areas and specialties in which the training of applicants for higher education is carried out”.

Professional Education Program has been amended in accordance with the Standard of Higher Education approved by Order of the Ministry of Education and Science of Ukraine of November 8th, 2021 no. 1197.

Professional Education Program has been developed by the workgroup in specialty 222 “Medicine” of Ivano-Frankivsk National Medical University consisting of:

- *Roman YATSYSHYN* – Dean of Medical Faculty, Dr. habil. (Med), Professor of the Department of Internal Medicine no. 1, Clinical Immunology and Allergology named after Yevhen NEIKO, PEP Guarantor;
- *Taras KOBRYN* – PhD (Med), Associate Professor of the Department of Infectious Diseases and Epidemiology, Pro-rector for Science and Education and Medical Work;
- *Andrii VOLOSIANKO* – Dr. habil. (Med), Professor, Head of the Department of Pediatrics;
- *Nataliia HENYK* – Dr. habil. (Med), Professor, Head of the Department of Obstetrics and Gynecology named after Professor I.D. Lanovyi;
- *Ivan HUDZ* – Dr. habil. (Med), Professor, Head of the Department of General Surgery;
- *Oryna DETSYK* – Dr. habil. (Med), Professor, Head of the Department of Social Medicine and Public Health;
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- *Nykhailo MIZIUK* – Dr. habil. (Med), Professor, Head of the Department of Hygiene and Ecology.

Academic community reviews:

1. *Stanislavchuk M.A.* – Dr. habil. (Med), Professor, Head of the Department of Internal Medicine of Vinnytsia National Pirogov Memorial Medical University;
2. *Fediv O.I.* – Dr. habil. (Med), Professor, Head of the Department of Internal Medicine and Infectious Diseases of Bukovinian State Medical University;
3. *Boichuk V.O.* – Dr. habil. (Physics and Mathematics), Associate Professor of the Department of Physics and Teaching Methods of Vasyl Stefanyk Precarpathian National University.

Reviews of external stakeholders:

1. *Sluhotska I.V.* – Director of the municipal non-profit enterprise “Ivano-Frankivsk Region Clinical Center for Palliative Care of Ivano-Frankivsk Region Council”;
2. *Pavlushynskyi Yu.M.* – Director of the municipal non-profit enterprise “Ivano-Frankivsk Region Perinatal Center of Ivano-Frankivsk Region Council”;
3. *Yakymchuk V.M.* – Director of the municipal non-profit enterprise “Ivano-Frankivsk Region Clinical Cardiology Center of Ivano-Frankivsk Region Council”;
4. *Malofii L.S.* – Director of the municipal non-profit enterprise “Ivano-Frankivsk Region Phthisiopulmonology Center of the Ivano-Frankivsk Region Council”;
5. *Fedoryka R.Ya.* – IFSMA medical faculty graduate of 2001, Head of Surgical Department of the municipal non-profit enterprise “Bolekhiv Central Town Hospital of Bolekhiv Town Council of Ivano-Frankivsk Region”;
6. *Bahrii M.M.* – IFSMA medical faculty graduate of 2004, Kandidat der medizinischen Wissenschaften, Institut für Pathologie und Zytologie am Ruppiner Klinikum, Hochschulklinikum der medizinischen Hochschule Brandenburg, Neuruppin, Bundesland Brandenburg, Bundesrepublik Deutschland.

1. Outline of Education Program, specialty 222 «Medicine»

1 – General Information	
Full name of higher educational institution and structural unit	Ivano-Frankivsk National Medical University (IFNMU) Medical Faculty
Degree of higher education and name of qualification in the original language	Education degree – Master. Educational qualification – Master of Medicine. Professional qualification – Doctor. Qualification in the diploma – Master of Medicine. Doctor.
Official name of Education Program	Professional Education Program “Medicine” of the second (master) level of higher education.
Diploma type and Education Program volume	Master degree diploma, unitary. The amount of ECTS credits for obtaining master degree in specialty “Medicine” on the basis of complete general secondary education is 360 ECTS credits, the term of study is 5 years and 10 months (full-time). On the basis of “junior bachelor” degree (educational qualification level – “junior specialist”), University has the right to admit and transfer no more than 30 ECTS credits received within the previous education program of junior bachelor (junior specialist) training in specialty 223 “Nursing”. On the basis of “bachelor” degree in the field of knowledge 22 Healthcare (except for 226 Pharmacy, Industrial Pharmacy) University has the right to admit and transfer no more than 30 ECTS credits received within the previous bachelor degree program 22 Healthcare in specialties 223 Nursing, 224 Medical Diagnosis and Treatment Technologies, 227 Physical Therapy, Occupational Therapy, 229 Public Health.
Accreditation availability	Professional Education Program was accredited by the National Agency for Higher Education Quality Assurance on June 11 th , 2021. PEP Accreditation Certificate no. 1724. (https://www.ifnmu.edu.ua/uk/pryimalna-komisia/litsenziiia-ta-sertyfikaty-pro-akredytatsiiu)
Cycle/level	NFQ of Ukraine – level 7, FQ-EHEA – second cycle, EQF-LLL – level 7

Preconditions	Requirements for previous education – complete general secondary education (NQF level 3 or higher) (according to the results of the National Multi-Subject Test or external independent evaluation certificates) or professional junior bachelor degree (junior bachelor, education-qualification level of a junior specialist) in therelevant specialty of medical field (according to the results of entrance examinations).
Language(s) of instruction	Ukrainian, English
Education Program validity	Education program is valid to July 1 st , 2026, with an annual scheduled update
Internet address of permanent placement of Education Program description	https://www.ifnmu.edu.ua/uk/publiczna-informatsiya/osvitni-prohramy
2 – Education Program Purpose	
<p>Training of a specialist who is able to solve complex tasks and problems in the field of healthcare or in training process, which involves research and/or innovation and is characterized by uncertainty in conditions and requirements.</p> <p>Development of the ability to apply acquired knowledge, skills, abilities and understanding in humanitarian, fundamental and professionally-oriented disciplines in solving standard tasks in the field of healthcare, the scope of which provides a list of syndromes and symptoms of diseases, physiological conditions and somatic disorders requiring special patient management tactics, emergencies, laboratory and instrumental studies, medical manipulations.</p>	
3 - Characteristics of Education Program	
Official name of Education Program	Professional Education Program “Medicine” of the second (master) level of higher education
Subject area (field of study, specialty, specialization)	Preservation of health, prevention, diagnosis and treatment of human diseases at the individual, family and population levels Field of study 22 “Healthcare” Specialty 222 “Medicine”
Education Program orientation	Professional Education Program is focused on students’ gaining professional knowledge and acquiring skills to train a competitive master of medicine of international level and is based on the latest advances of medical science, the principles of modern vocational education, taking into account the current state and modern standards of higher

	education and healthcare for successful implementation of professional activities.
Main focus of Education Program and specialization	<p>The education program is focused on training of competitive specialists in the field of medicine, being able to carry out their professional activities on the basis of mastering a set of competencies, solving complex specialized tasks and problems in healthcare or during learning process, which are characterized by uncertainty in prevention, diagnosis and treatment of nosological forms at the individual or public level, using algorithms, biomedical, social and psychopedagogical methods, which are based on knowledge of the morpho-functional state of organs and organ systems, assessment of the ecosystem impact on public health, capable for planning and implementation of adequate professional activity of a doctor on the basis of professional training disciplines.</p> <p>Special higher education in the field of knowledge 22 “Healthcare”, specialty 222 “Medicine”</p> <p>Key words: healthcare, medicine, higher education, master degree.</p>
Program features	<p>The program is designed to form professional competencies of future professionals, it combines students’ theoretical and practical training, based on the latest scientific results and principles of science-based medical practice in healthcare, it is implemented in a logical sequence of disciplines and involves practicing (clinical) professionals’ guidance of clinical practice and practical classes in disciplines of professional training cycle.</p> <p>Practical training sessions are obligatory for all the students, they are held on the basis of the University Clinic of IFNMU, healthcare facilities of Ivano-Frankivsk and the region.</p> <p>The program is also implemented in English.</p>
4 – Graduates’ Suitability for Employment and Further Education	

Suitability for employment	<p>A specialist is prepared to work according to Classifier of Economic Activities SC 009:2010:</p> <p>Section Q. Health and social care</p> <p>Section 86. Healthcare</p> <p>Group 86.1 Hospital Activities</p> <p>Group 86.2 Medical and dental practice</p> <p>Class 86.21 General medical practice</p> <p>Class 86.22 Specialized medical practice</p> <p>After completing Professional Education Program, specialty 222 “Medicine”, a specialist is able to perform the following professional work:</p> <ul style="list-style-type: none"> • Internship doctor (CP code – 3229); • Junior doctor (CP code – 3221); • Resident doctor (CP code – XXX); • Research scientist (General Medicine, except for Dentistry) (CP code – 2221.1); • Scientific researcher in the field of Medicine (except for Nursing and Obstetrics) (CP code – 2229.1); • Higher education institution teacher (CP code – 2310.2)
Further education	<p>A graduate can enter postgraduate education programs (internship, residency), where training according to education programs of a doctor is carried out.</p> <p>After internship, residency training a specialist is awarded the qualification of a doctor being able to perform the professional work noted in SC 003:2010 and can hold a relevant medical position:</p> <p>Class 222 Professionals in the field of Medicine (except for Nursing)</p> <p>Subclass 2221 Professionals in the field of General Medicine (except for Dentistry)</p> <p>Group 2221.2 Doctors</p> <p>Subclass 2225 Professionals in the field of Medical and Preventative Care</p> <p>2225.2 Doctors, specialists in the field of Medical and Preventative Care</p> <p>2229.2 Professionals in the field of Medicine (except for Nursing and Obstetrics)</p> <p>Such a specialist has the right:</p> <ul style="list-style-type: none"> - to undergo specialization and perform doctor’s relevant professional work of a certain specialty, noted in current National Classifier of Ukraine “Classifier of Professions”, to hold a relevant medical position; - to continue education at the third (educational and

	<p>scientific) level of higher education to obtain PhD degree;</p> <ul style="list-style-type: none"> - to acquire another specialty, which gives the opportunity to hold a relevant medical position and perform relevant professional work; - to improve qualification level in continuing postgraduate education system, specialty 222 “Medicine”, as well as to acquire additional qualifications in postgraduate education system.
5 – Teaching and Assessment	
Teaching and studying	<p>Integrative, competence, student-centered, personality-oriented learning, initiative self-directed learning, problem-oriented learning, learning through work and clinical placement in accordance with the requirements of the field standards of higher education of specialist qualification.</p> <p>Lectures, seminars, practical classes in small groups, work placement, practical training in educational and practical centers, consultations with teachers and students’ independent work, university virtual learning environment, forms of blended learning (e-learning).</p>
Assessment	<p>Assessment of learning outcomes is carried out according to the principles of differentiation, individuality, topicality, objectivity, systematicity and systemacity, planning element, requirements unity, openness, transparency, accessibility and clarity of assessment methods, taking into account personal students’ capabilities.</p> <p>The assessment system of students’ knowledge in each discipline includes a system of parameters which reflect their objective knowledge and skills, it is conducted in the form of current, midterm and final control of knowledge, assessment of results of practical training sessions and graduates’ certification and is based on academic integrity and transparency.</p> <p>Current control is testing of knowledge during practical and seminar classes in the form of tests, reports or projects presentation and practical skills demonstration.</p> <p>Final knowledge control is carried out in the form of pass-fail tests, summative module assessments and examinations.</p> <p>Certification of students for the second (master) level of higher education, specialty 222 “Medicine” is carried out in the form of the Unified State Qualification Examination (USQE). The Unified State Qualification Examination is conducted in accordance with the Procedure for conducting the Unified State Qualification Examination for master</p>

	<p>degree applicants in specialties of the field of knowledge “Healthcare” and includes:</p> <ul style="list-style-type: none"> • Integrated examination “STEP” (conducted in two test stages – “STEP 1” (the level of professional competence in general (fundamental) disciplines is assessed) and “STEP 2” (the level of professional competence in professionally oriented (clinical) disciplines is assessed), which evaluates conformity of specialists’ training quality to higher education standards and is carried out by the State Organization “Testing Board for Professional Competence Assessment of Higher Education Trainees in Medicine and Pharmacy” at the Ministry of Health of Ukraine; • Examination in Professional English, which assesses a student’s competence in professional English and is conducted by the Testing Board at the Ministry of Health of Ukraine; • Objective Structured Practical (Clinical) Examination, which assesses the graduate’s readiness for professional activities in accordance with the requirements of higher education standard by demonstrating practical (clinical) components of professional competence on a real object or model and is conducted by the University Examination Board.
6 – Program Competencies	
Integral Competency	Ability to solve complex research and innovation tasks in the field of medicine. Ability to continue learning with a high degree of autonomy.
General Competencies (GC)	<p>GC 1. Ability to think abstractly, analyze and synthesize.</p> <p>GC 2. Ability to learn and master modern knowledge.</p> <p>GC 3. Ability to apply knowledge in actual practice.</p> <p>GC 4. Knowledge and understanding of the subject essence as well as professional activity comprehension.</p> <p>GC 5. Ability to adapt and take actions in a new situation.</p> <p>GC 6. Ability to take reasoned decisions.</p> <p>GC 7. Teamwork ability.</p> <p>GC 8. Skills in interpersonal interaction.</p> <p>GC 9. Ability to communicate in the foreign language.</p> <p>GC 10. Skills in information and communication technologies application.</p> <p>GC 11. Ability to search, process and analyze information from various sources.</p> <p>GC 12. Being determined and persistent in completing tasks and responsibilities.</p>

	<p>GC 13. Comprehension of equal opportunities and gender-specific issues.</p> <p>GC 14. Ability to exercise one's rights and duties as a member of society, to realize the values of civil (democratic) society and the need for its sustainable development, supremacy of the law, human and civil rights and liberties in Ukraine.</p> <p>GC 15. Ability to preserve and multiply moral, cultural and scientific values and achievements of society by the virtue of comprehension of the history and consistent patterns of development of the subject area, its place in the general system of knowledge about nature and society as well as in social, technical and technological advancement, to make use of various types and forms of physical activity for dynamic recreation and healthy lifestyle.</p>
Professional Competencies (PC)	<p>PC 1. Ability to collect medical information about a patient and to analyze clinical data.</p> <p>PC 2. Ability to identify the list of essential laboratory and instrumental examinations and to assess their results.</p> <p>PC 3. Ability to make preliminary and clinical diagnoses of diseases.</p> <p>PC 4. Ability to determine patients' rational work and rest patterns in disease treatment.</p> <p>PC 5. Ability to determine patients' rational diet pattern in disease treatment and prevention.</p> <p>PC 6. Ability to determine principles and patterns of disease treatment and prevention.</p> <p>PC 7. Ability to diagnose emergencies.</p> <p>PC 8. Ability to determine tactics and to provide emergency medical care.</p> <p>PC 9. Ability to provide medical evacuation measures.</p> <p>PC 10. Skills to perform medical manipulations.</p> <p>PC 11. Ability to solve medical problems in new or unfamiliar environments on the basis of incomplete or limited information, taking into account aspects of social and ethical responsibility.</p> <p>PC 12. Ability to determine management tactics of physiological pregnancy, physiological delivery and postpartum period. Family planning and contraceptive counselling skills.</p> <p>PC 13. Ability to take sanitation and hygiene preventive measures.</p> <p>PC 14. Ability to plan and take prophylactic and anti-epidemic measures to prevent infectious diseases.</p>

	<p>PC 15. Ability to assess working capacity.</p> <p>PC 16. Ability to maintain medical records including e-forms.</p> <p>PC 17. Ability to evaluate environmental impact, socio-economic and biological determinants on individual, family, and population' health.</p> <p>PC 18. Ability to analyze activities of a doctor, unit, and healthcare institution, to make arrangements for medical care of high quality and improvement of medical resource utilization efficiency.</p> <p>PC 19. Ability to make arrangements for organization and integration of public medical care and medical service marketing.</p> <p>PC 20. Ability to conduct epidemiological and medical statistical studies of public health; to process government, social, economic and medical information.</p> <p>PC 21. Ability to clearly and unambiguously communicate knowledge, conclusions and arguments on health problems and related issues to specialists and non-specialists, in particular to students.</p> <p>PC 22. Ability to manage health workflows that are complex, unpredictable and require new strategic approaches.</p> <p>PC 23. Ability to develop and implement scientific and applied projects in the field of healthcare.</p> <p>PC 24. Adherence to ethical principles when working with patients and laboratory animals.</p> <p>PC 25. Adherence to professional and academic integrity, responsibility for the accuracy of scientific outcomes.</p>
7 – Program Learning Outcomes	
<p>Program Learning Outcomes (PLO)</p> <p>*(the lists are given in Appendix 1)</p>	<p>PLO 1. To possess thorough knowledge of professional activity structure. To be able to carry out professional activities that require updating and integration of knowledge. Responsibility for professional development, ability to further professional training with high level of autonomy.</p> <p>PLO 2. Understanding and knowledge of basic and clinical biomedical sciences at the level sufficient to solve professional problems in the field of healthcare.</p> <p>PLO 3. Specialized conceptual knowledge which includes scientific achievements in the field of healthcare and is the basis for research, critical reflection in the field of medicine and related interdisciplinary issues.</p> <p>PLO 4. To highlight and identify major clinical symptoms and syndromes (according to list 1); using standard methods, preliminary data of patient's anamnesis and examination,</p>

knowledge of human organs and systems, to make a possible nosological or syndromic preliminary clinical diagnosis of a disease (according to list 2).

PLO 5. To collect information on patient's health status, to assess psychomotor and physical development of a patient and condition of his organs and systems; to evaluate information about the diagnosis based on laboratory and instrumental examination results (according to list 4) taking into account the patient's age.

PLO 6. To establish final clinical diagnosis, while maintaining high ethical and legal standards, by making a reasonable decision and logic analysis of the obtained subjective and objective data of the clinical and additional health examination as well as differential diagnosis under the physician's supervision in the environment of a medical institution (according to list 2).

PLO 7. To administer and analyze additional (mandatory and optional) examination methods (laboratory, radiological, functional and/or instrumental) according to list 4 of patients with diseases and disorders of organs and systems for making a differential diagnosis (according to the list 2).

PLO 8. To determine the major clinical syndrome or the cause of the injured/victim's grave condition (according to list 3) by making reasoned decisions and evaluation of a person's medical state under any conditions (at home, outdoors, in a medical institution or its subdivision) including emergency situations, armed hostility and field conditions, under information and time restrictions.

PLO 9. To determine treatment content and principles (conservative therapy, surgical treatment) of patients with diseases (according to list 2) taking into account the patient's age in or outside a medical institution and during medical evacuation stages, including in the field, based on preliminary clinical diagnosis, while maintaining ethical standards and legal rules, by making reasoned decisions based on available algorithms and standard schemes, and to be able to justify personalized recommendations under physician's supervision in a medical institution when standard scheme expansion is needed.

PLO 10. To determine the necessary work, rest and diet patterns based on preliminary clinical diagnosis, while maintaining ethical standards and legal rules, by making reasoned decisions based on available algorithms and standard schemes.

PLO 11. To determine management approach, plan, and tactics of physiological pregnancy, physiological delivery and postpartum period by making a reasoned decision based on available algorithms and standard schemes.

PLO 12. To assess a newborn's health status making a reasoned decision according to available algorithms and standard schemes, while maintaining ethical standards and legal rules.

PLO 13. To assess and monitor the development of a child, to provide recommendations concerning breastfeeding and nutrition depending on age, to organize preventive immunization according to the schedule.

PLO 14. To determine tactics and render emergency medical care (according to list 3) in a limited time-frame, according to existing clinical protocols and treatment standards.

PLO 15. To render medical assistance and to arrange medical evacuation procedures among the population and servicemen in emergency situations, including armed hostility and field conditions.

PLO 16. To form rational medical routes of patients; organize interaction with colleagues at one's own and other institutions, organizations and establishments; to apply tools to promote medical services on the market, based on the analysis of the population needs, in the conditions of functioning of a healthcare institution, its subdivision, in a competitive environment.

PLO 17. To perform medical manipulations (according to list 5) in a medical institution, at home or at work on the basis of a preliminary clinical diagnosis and/or patient's condition by making an informed decision according to relevant ethical and legal standards.

PLO 18. To determine the state of functioning and limitations of a person's life and duration of disability with the issuance of relevant documents, in the healthcare institution on the basis the disease and its course data, features of professional activity, etc. To maintain medical records of the patient and the population on the basis of regulatory documents.

PLO 19. To plan and carry out sanitary-hygienic and preventive activities for the occurrence and spread of diseases among the population.

PLO 20. To analyze the epidemiological situation and carry out measures of mass and individual, general and local prevention of infectious diseases.

PLO 21. To search for the necessary information in

	<p>professional literature and databases of other sources, to analyze, evaluate and apply this information.</p> <p>PLO 22. To apply modern digital technologies, specialized software, statistical methods of data analysis for solving complex health issues.</p> <p>PLO 23. To evaluate the environmental impact on the human health for assessing public morbidity.</p> <p>PLO 24. To arrange the necessary level of individual safety (personal and persons' under care) in case of typical dangerous situations in the individual field of activity.</p> <p>PLO 25. To convey clearly and unambiguously one's own knowledge, conclusions and arguments on health issues and related problems to specialists and non-specialists.</p> <p>PLO 26. To manage health work processes which are complex, unpredictable and require new strategic approaches, to organize the work and professional development of the staff considering acquired skills of effective teamwork, leadership positions, good quality, accessibility and fairness, ensuring of integrated medical assistance.</p> <p>PLO 27. To communicate fluently in the state and English languages, both orally and in writing in order to discuss professional activities, research and projects.</p> <p>PLO 28. To make effective decisions on health issues, to assess essential resources, to take into account social, economic and ethical implications.</p> <p>PLO 29. To plan, organize and conduct activities for specific prevention of infectious diseases, including both mandatory and recommended preventive vaccinations in accordance with the National Calendar. To manage vaccine residues, to organize additional vaccination campaigns, including immunoprophylaxis measures.</p>
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8 – Resource Allocation for Program Implementation

Staffing	<p>Academic staff involved in the Professional Education Program implementation have a qualification corresponding to the specialty, a confirmed level of scientific and professional activity. The vast majority of academic staff are full-time employees of Ivano-Frankivsk National Medical University, the employees of clinical departments are practitioners. Staffing of departments and project team meet the license conditions of educational activities.</p> <p>The group providing Professional Education Program “Medicine” consists of 111 academic employees, 104 (93.7%) of them have a scientific degree and/or academic status and</p>
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	<p>47 (45.2%) of them have a doctorate degree and/or are professors.</p> <p>The scientific and pedagogical specialty of teachers who provide the educational process corresponds to the disciplines they teach.</p> <p>57 members (51.4%) of the academic staff carry certificates of B₁-C₁ level of English in relation to the Common European Framework of Reference for Languages or have qualification documents (diploma of higher education, academic degree) related to the use of English, including 50 people (45.0%) having at least equal to B₂ level. The share of staff having a degree of doctor of science or candidate of science and rendering lectures in the specialty as well as being permanent employees is 100%.</p> <p>Rendering lectures and giving practical, seminar and laboratory classes as well as the level of the scientific and professional activity of each of the academic staff is evidenced by the fulfilment, over the last five years, of at least four criteria indicated in paragraph 5 of notes – subparagraphs 1-18 of the paragraph.</p> <p>Graduate departments of special (professional) training are headed by specialists of the relevant scientific and pedagogical specialty: – Doctors of Sciences.</p> <p>Professional development is carried out on a regular basis in accordance with the Procedure of Professional Development and Advanced Training of Educational and Academic Workers, which came into effect on January 1st, 2020, the frequency of professional development is once a year over the course of five years.</p> <p>Contracts of employment have been concluded with all members of the academic staff having passed the competition commission.</p>
Material and technical support	<p>IFNMU is provided with premises for training sessions as well as tests and examinations. Classrooms are equipped with multimedia training tools (provision of multimedia equipment is 44.9%). The disciplines required for education program implementation are provided with appropriate clinical bases, computerized workplaces (3 students per 1 computer), laboratories, equipment, and facilities. The educational process is provided by 13 theoretical and 32 clinical departments. All clinical departments function on the basis of the city's healthcare facilities, allowing students to learn from hands-on examples, at the bedside, and teachers to be directly involved in providing highly qualified care to the region's</p>

	<p>population. The university departments are provided with necessary equipment and facilities, allowing to arrange and give classes at a high methodological and scientific level.</p> <p>The University has a well-equipped training and practical centre “Medicine” which includes 13 educational and practical centres for various functional purposes, where high-tech simulation equipment is applied. University training foundation allows organizing and conducting educational classes at the appropriate scientific and methodological level in all academic disciplines.</p> <p>The university has a developed social infrastructure: library, reading rooms, dining facilities, gyms and sports grounds, and a medical centre. The students are provided with a dormitory.</p>
Information and methodological support	<p>To give coverage of the information dealing with educational and methodological support, the official website of IFNMU https://www.ifnmu.edu.ua/uk/ contains basic information about its activities (structure, licenses and certificates of accreditation, educational / scientific / publishing activities, the University development strategy, Rector’s reports, Quality Management System data, and standard documents on education, research and academic structural units and their staff, list of academic disciplines, admission regulations, public discussion of current issues, and contact information).</p> <p>In order to provide students and teachers of the university with up-to-date information, “cloud technologies” based on Microsoft Office 365 are used. All IFNMU computers are 100% licensed by Microsoft Windows7 Pro, Windows 10 Edu, and all teachers and students of the University are 100% licensed by Microsoft OfficeProPlus.</p> <p>Novel interactive learning technologies are extensively introduced into the educational process of IFNMU: training blocks “virtual patients”, blended learning (e-learning) based on the University “cloud”; interactive learning complex on the basis of EDX-IFNMU; on-line learning (lectures and practical classes), webinars on Microsoft Teams licensed platform, on-line students questionnaires and quizzes using MicrosoftForms. Modern electronic learning content (virtual programs, presentations) can be used both for students’ individual work and by means of multimedia equipment at lectures, practical and seminar classes, as well as for students’ distance learning.</p> <p>The University electronic resource contains educational learning materials on all academic disciplines of the</p>

	<p>curriculum, including the system of distance learning.</p> <p>The IFNMU library is completely provided with domestic and foreign professional periodicals of relevant or related profile, including e-forms. The University library collection is annually replenished and meets the students' needs for current domestic and foreign professional periodicals in specialty (including in electronic form).</p> <p>The library has access to field-oriented periodical databases in English and other web resources in specialty. An electronic literature catalogue functions to optimize the search for the required literature.</p> <p>Teaching and learning support of the educational process in IFNMU consists of:</p> <ul style="list-style-type: none"> - curriculum and explanatory note to it; - work programs, syllabuses, teaching materials for each discipline of the curriculum; - practical training programs, work programs of practical training sessions; banks of test tasks, teaching materials for students for all forms of current and final classes and students' certification.
9 – Academic Mobility	
National Credit Mobility	<p>The key aspects of the national credit mobility in accordance with Resolution of the Cabinet of Ministers of Ukraine no. 579 “On Approval of the Regulations on the Implementation of the Right to Academic Mobility” <u>№ 579 «Про затвердження Положення про порядок реалізації права на академічну мобільність»</u> is the right to participate in academic mobility programs to all participants in the educational process; clear definition of types and forms of academic mobility; consolidation of the principle of transferring of the received credits on the basis of the European Credit Transfer System (ECTS). The procedure of academic mobility by all participants in the educational process is an important step in the implementation of the Law of Ukraine “On Higher Education” <u>Про вищу освіту</u> and the creation of effective tools for the internationalization of the Ukrainian higher education institutions.</p> <p>ECTS credits received at other higher educational institutions of Ukraine are transferred in accordance with Regulations on Organization of Educational Process in IFNMU <u>https://ifnmua.edu.ua/uk/normatyvni-dokumenty</u></p>

International Credit Mobility	<p>International credit mobility involves cooperation with European universities to organize mutual exchanges of students, teachers and administrative staff on projects of international academic mobility. Credit transfer within Erasmus + International Credit Mobility Program is realized on the basis of the Law of Ukraine “On Higher Education”, agreements between IFNMU and higher educational institutions of other countries, Regulations on the Organization of Educational Process in IFNMU, Credit Transfer Regulations (personal curriculum) and academic deficiency determination in IFNMU.</p> <p>https://ifnmu.edu.ua/uk/normatyvni-dokumenty</p>
Teaching of foreign students	<p>Teaching of foreign students is performed in accordance with the requirements of legislation. Admission to the University is performed in accordance with “Admission Regulations” and taking relevant professional examinations.</p> <p>Ukrainian and English is the medium of instruction depending upon a student’s choice.</p>

2. List of Professional Education Program components and their logical consistency

2.1. List of Professional Education Program components

Academic discipline code	Education Program components (academic disciplines, practical training sessions)	Number of ECTS credits	Summative assessment form
EP Mandatory Components			
General Training			
MCG 1	Professional Ukrainian Language ¹	3	Summative module assessment
MCG 2	History of Ukraine and Ukrainian Culture	3	Summative module assessment
MCG 3	Philosophy	3	Summative module assessment
MCG 4	Professional Foreign Language ¹	6	Summative module assessment
MCG 5	Latin Language and Medical Terminology	3	Summative module assessment
MCG 6	Medical Chemistry	4	Summative module assessment
Total		22	
Professional Training			
MCP 7	Medical Biology	5	Summative module assessment
MCP 8	Biological and Bioorganic Chemistry	9	Summative module assessment
MCP 9	Human Anatomy	14	Summative module assessment
MCP 10	Histology, Cytology and Embryology	9.5	Summative module assessment

MCP 11	Physiology	9.5	Summative module assessment
MCP 12	Microbiology, Virology and Immunology	8	Summative module assessment
MCP 13	Pathomorphology	6	Summative module assessment
MCP 14	Pathophysiology	6	Summative module assessment
MCP 15	Pharmacology	6	Summative module assessment
MCP 16	Hygiene and Ecology	5	Summative module assessment
MCP 17	Propaedeutics of Internal Medicine	5	Summative module assessment
MCP 18	Propaedeutics of Pediatrics	5	Summative module assessment
MCP 19	General Surgery	6	Summative module assessment
MCP 20	Medical Psychology	3	Summative module assessment
MCP 21	Internal Medicine, including:	23	
	Internal Diseases	8	Summative module assessment
	Clinical Immunology and Allergology	2	Summative module assessment
	Occupational Diseases	1	Summative module assessment
	Cardiology	4	Summative module assessment

	Hematology	1	Summative module assessment
	Pulmonology	2	Summative module assessment
	Rheumatology	1.5	Summative module assessment
	Gastroenterology	1.5	Summative module assessment
	Nephrology	1	Summative module assessment
	Medical Emergencies	1	Summative module assessment
MCP 22	Endocrinology	3	Summative module assessment
MCP 23	Clinical Pharmacology and Medical Genetics	3	Summative module assessment
MCP 24	Pediatrics and Childhood Infectious Diseases, Including:	14	
	Pediatrics	10.5	Summative module assessment
	Childhood Infections	3.5	Summative module assessment
MCP 25	Surgery, including:	20	
	Surgical Diseases	16	Summative module assessment
	Pediatric Surgery	2.5	Summative module assessment
	Neurosurgery	1.5	Summative module assessment

MCP 26	Obstetrics and Gynecology	10	Summative module assessment
MCP 27	Urology	3	Summative module assessment
MCP 28	Otorhinolaryngology	3	Summative module assessment
MCP 29	Ophthalmology	3	Summative module assessment
MCP 30	Neurology	4	Summative module assessment
MCP 31	Psychiatry, Narcology	3	Summative module assessment
MCP 32	Dermatology, Venereology	3	Summative module assessment
MCP 33	Forensic Medicine and Medical Jurisprudence	3	Summative module assessment
MCP 34	Phthisiology	4	Summative module assessment
MCP 35	Infectious Diseases	5	Summative module assessment
MCP 36	Epidemiology and Principles of Evidence-Based Medicine	3	Summative module assessment
MCP 37	Oncology and Radiation Medicine, including:	5	
	Oncology	3.5	Summative module assessment
	Radiation Medicine	1.5	Summative module assessment
MCP 38	Traumatology and Orthopedics	3	Summative module assessment

MCP 39	Anesthesiology and Intensive Care	3	Summative module assessment
MCP 40	Emergency and Urgent Medical Care	3	Summative module assessment
MCP 41	General Practice (Family Medicine)	3	Summative module assessment
MCP 42	Social Medicine, Public Health	3	Summative module assessment
MCP 43	Military and Emergency Surgery	3	Summative module assessment
Total		227	
Practical Training Sessions			
	<i>EP Mandatory Components</i>		
PT 44	Patient Care	5	Summative module assessment
PT 45	Nursing Clinical Placement	5	Summative module assessment
PT 46	In-Patient Medical Practical Training	4	Summative module assessment
PT 47	Practical Training in Family Medicine	4	Summative module assessment
	<i>EP Elective Components</i>		
	<i>Block 17.</i>		
EC 17.1.	Clinical Practical Training	8	Summative module assessment
EC 17.2.	Professional Practical Training		
	<i>Block 25.</i>		
EC 25.1.	Pre-diploma Simulation Practical Training	4	Summative module assessment
EC 25.2.	Pre-diploma Education and Training Practice		
Total		30	

List of Elective Components			
	Block 1.		
EC 1.1.	History of Medicine	3	Pass-fail test
EC 1.2.	Medical Knowledge Development		
	Block 2.²		
EC 2.1.	Foreign Language	3	Summative module assessment
EC 2.2.	Doctor's Foreign Language Communication		
	Block 3.		
EC 3.1.	Medical and Biological Physics	5	Summative module assessment
EC 3.2.	Modern Issues of Biophysics in Medicine		
	Block 4.		
EC 4.1.	Fundamentals of Psychology	3	Pass-fail test
EC 4.2.	Communication Psychology		
EC 4.3.	Art Therapy		
EC 4.4.	European Computer Competence Standard		
EC 4.5.	Current Molecular Biology Issues		
EC 4.6.	Elocution		
EC 4.7.	Personalized Medicine		
EC 4.8.	Corrective Pedagogy		
EC 4.9.	Academic Integrity in Student Environment		
EC 4.10.	Sociology		
	Block 5.		
EC 5.1.	Morphological Principles of Cell-Based Therapy	3	Summative module assessment
EC 5.2.	Theoretical Foundations of Modern Reproductive Technologies		
EC 5.3.	Modern Cell and Gene Technologies in Medicine		
EC 5.4.	Applied Aspects of Modern Parasitology		
	Block 6.		
EC 6.1.	Life Safety, Fundamentals of Bioethics and Biosafety	3	Pass-fail test
EC 6.2.	Medical and Social Issues in Modern Bioethics		
	Block 7.		
EC 7.1.	Medical Informatics	3	Summative module assessment
EC 7.2.	Modern Computer-Based Technologies in Medicine		
	Block 8.		
EC 8.1.	Occupational Safety in Professional Field	3	Pass-fail test
EC 8.2.	Occupational Health and Safety in Medicine		

	Block 9.³		
EC 9.1.	Training of reserve officers in the field of knowledge “Healthcare”, specialty Medicine	8	Summative module assessment
EC 9.2.	Fundamentals of professional training of medical service corps officers		
	Block 10.		
EC 10.1.	Clinical Anatomy and Operative Surgery	3	Summative module assessment
EC 10.2.	Operative Surgery, Topographic Anatomy		
	Block 11.		
EC 11.1.	Valeology	3	Pass-fail test
EC 11.2.	General Military Training		
EC 11.3.	Toxic elements in the environment and their impact on drinking water quality and human health		
EC 11.4.	Fundamentals of Personalized Medicine		
EC 11.5.	Medical Ukrainian/English Language		
EC 11.6.	Modern Types of Motor Skills		
EC 11.7.	Academic writing		
EC 11.8.	Information Hygiene and Critical Thinking		
	Block 12.		
EC 12.1.	Physiological Aspects of Endocrinology	3	Summative module assessment
EC 12.2.	Basics of Healthy Eating (Diet Therapy)		
EC 12.3.	Clinical Microbiology		
	Block 13.		
EC 13.1.	Integrated Course of Biomedical Sciences	3	Examination
EC 13.2.	Integrated Course of Fundamental Sciences		
	Block 14.		
EC 14.1.	Modern Public Health Issues	6	Summative module assessment
EC 14.2.	Public Health		
	Block 15.		
EC 15.1.	Radiology	4	Summative module assessment
EC 15.2.	Radiodiagnosis, Radiation Therapy		
	Block 16.		
EC 16.1.	Modern Methods of Genetic Testing	3	Pass-fail test
EC 16.2.	Latin and Greek in Medical Terminology		
EC 16.3.	Ukrainian/English in Healthcare		
EC 16.4.	Nutritiology		
EC 16.5.	Clinical Laboratory Investigation of Internal Organs		
EC 16.6.	Nutritional Biochemistry		
EC 16.7.	Fundamentals of Social Psychology		

EC 16.8.	Health and Physical Activity		
EC 16.9.	Internal Disease Phytotherapy		
EC 16.10.	Surgical Techniques		
	Block 18.		
EC 18.1.	Physical Rehabilitation, Sports Medicine	3	Summative module assessment
EC 18.2.	Rehabilitation Technologies in Medicine		
	Block 19.		
EC 19.1.	Phytotherapy in Internal Medicine	3	Pass-fail test
EC 19.2.	Operative and Urgent Surgical Techniques		
EC 19.3.	Cosmetology		
EC 19.4.	Fundamentals of Smoking, Alcoholism and Substance Addiction Prevention		
EC 19.5.	Ukrainian / English Medical Terminology		
EC 19.6.	Health Economics		
EC 19.7.	Clinical and Laboratory Examination of Internal Organs		
EC 19.8.	Endoscopic Technologies in Obstetrics and Gynecology		
EC 19.9.	Family Planning		
EC 19.10.	Sterile Marriage. Assisted Reproductive Technologies		
EC 19.11.	Medical Force Protection		
EC 19.12.	Course of Survival in Extreme Environments		
EC 19.13.	Fundamentals of Psychoanalysis		
EC 19.14.	Therapeutic Massage		
EC 19.15.	Sports Games, Aerobics		
EC 19.16.	Current Issues of Physiotherapy, Balneology and Rehabilitation		
EC 19.17.	Professional Communication of Healthcare Practitioner		
EC 19.18.	Side Effects of Drugs		
	Block 20.		
EC 20.1.	Vascular Surgery	3	Pass-fail test
EC 20.2.	Fundamentals of Sexology and Sexopathology		
EC 20.3.	Urgent Issues in Rheumatology		
EC 20.4.	Fundamentals of Reflexotherapy		
EC 20.5.	Autopsy Course		
EC 20.6.	Obstetric Emergencies		
EC 20.7.	Common Surgery Techniques		
EC 20.8.	Professional Ukrainian / English Communication		
EC 20.9.	Fundamentals of Dentistry		
EC 20.10.	Medical Genetics		

EC 20.11.	Radiation Medicine		
EC 20.12.	Instrumental Methods of Functional Diagnostics		
EC 20.13.	Urgent Issues in Gastroenterology		
EC 20.14.	Urgent Issues in Pulmonology		
EC 20.15.	Urgent Issues in Neurology		
EC 20.16.	Urgent Issues in Clinical Pathomorphology		
EC 20.17.	Endoscopic Technologies in Obstetrics and Gynecology		
EC 20.18.	Development of Clinical Thinking in Internal Medicine (according to the CBCR model)		
EC 20.19.	Age Aspects of Pharmacotherapy		
EC 20.20.	Endoscopic Technologies in Medicine		
EC 20.21.	Family Planning		
EC 20.22.	Extragenital Pathology and Pregnancy		
EC 20.23.	Dermato-oncology		
EC 20.24.	TB Diagnosis Algorithm		
EC 20.25.	Digital Learning on the Impact of Climate Change on Health: Health and Welfare		
	Block 21.		
EC 21.1.	Palliative and Hospice Medicine	3	Summative module assessment
EC 21.2.	Organizational Principles of Palliative and Hospice Medicine		
	Block 22.		
EC 22.1.	Novel Technologies in Medicine	4	Examination
EC 22.2.	Current Standards of Medical Care		
	Block 23.		
EC 23.1.	Urgent Issues in Cardiosurgery	3	Pass-fail test
EC 23.2.	Urgent Issues in Hematology and Transfusion Medicine		
EC 23.3.	Urgent Issues in Cardiology		
EC 23.4.	Urgent Issues in Clinical Immunology and Allergology		
EC 23.5.	Urgent Issues in Cerebrovascular Pathology		
EC 23.6.	Professional Ukrainian / English in Use		
EC 23.7.	Clinical Aspects of Immunoprophylaxis		
EC 23.8.	Clinical Parasitology and Tropical Medicine		
EC 23.9.	Management and Marketing in Health Care		
EC 23.10.	Plastic and Reconstructive Surgery		
EC 23.11.	Modern Aspects of Personal Forensic Identification		
EC 23.12.	Clinical Microbiology, Virology and Immunology		
EC 23.13.	Urgent Issues in ENT Pathology		

EC 23.14.	Non-pharmacological Methods of Treatment and Rehabilitation		
EC 23.15.	Selected Issues on Female Reproductive Endocrinology		
EC 23.16.	Organizational Basis of Family Medicine		
EC 23.17.	Fundamentals of Transplantology		
EC 23.18.	Urgent Issues of HIV infection		
EC 23.19.	Extreme Medicine		
EC 23.20.	Urgent Issues in Neurosurgery		
EC 23.21.	Urgent Issues in Nephrology		
EC 23.22.	Medical Aspects of Bioethics and Biosafety		
EC 23.23.	Recreation and Health Physical Education		
EC 23.24.	Modern Surgical Technologies		
EC 23.25.	Evidence-based Medicine		
EC 23.26.	Emergencies in Obstetrics and Gynecology		
EC 23.27.	Family Planning		
EC 23.28.	Extragenital Pathology and Pregnancy		
EC 23.29.	Sterile Marriage. Assisted Reproductive Technologies		
EC 23.30.	Endoscopic Technologies in Obstetrics and Gynecology		
EC 23.31.	Urologic emergencies		
EC 23.32.	Andrology		
EC 23.33.	Digital Learning on the Impact of Climate Change on Health: Climate Change		
	Block 24.		
EC 24.1.	Hygiene in Rural Areas	3	Summative module assessment
EC 24.2.	Environmental Impact on Human Health		
Overall total of EP elective components		93	
Non-Credit Components			
NCC 1	Physical Training	320 hours	Pass-fail test
NCC 2	Certification		USQE
Overall total of Education Program components		360	

Footnotes:

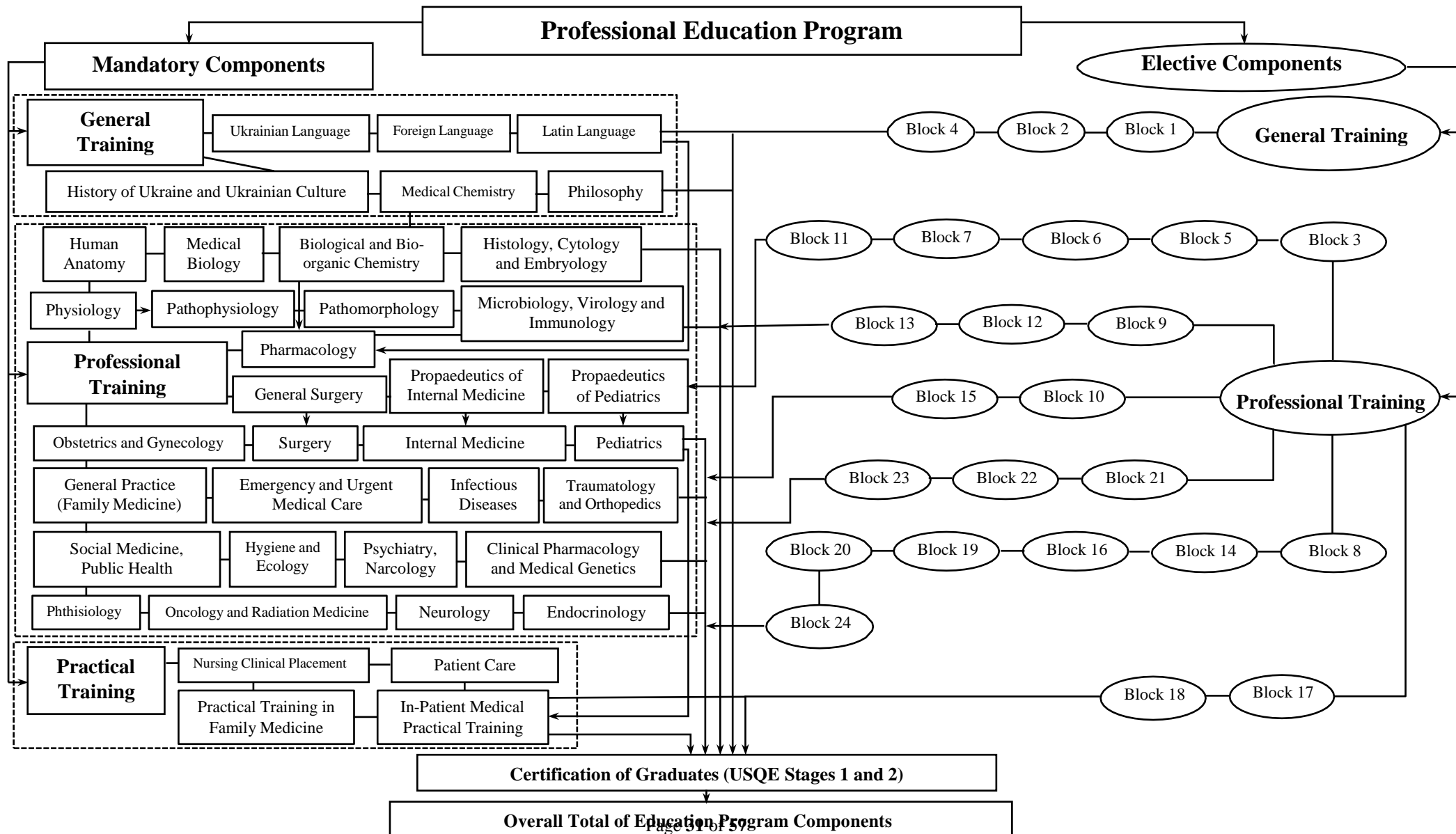
¹ – Instead, international students study MC “Ukrainian Language”.

² – Instead, international students study EC “Ukrainian as a Foreign Language” / “Ukrainian Language Communication”.

³ – Instead, international students study EC “Premedical Care in Emergency Situations” / “Fundamentals of Medical Providing of Population”.

⁴ – Instead, international students study EC 11.5, EC 16.3, EC 19.5, EC 20.8, EC 23.6 “Professional Ukrainian / English Language”.

2.2. Structural and logical scheme of the Professional Education Program



3. Student Certification Form

Certification of degree seeking applicants for the second (master) level of higher education according to Professional Education Program in specialty 222 “Medicine” is carried out in the form of the Unified State Qualification Examination (USQE).

The USQE is carried out in accordance with the Procedure of implementation of the Unified State Qualification Examination for master degree trainees in the field of knowledge “Healthcare” and consists of the following components:

- Integrated test-based exam “STEP” (conducted in two test stages – “STEP 1” (the level of professional competence in general (fundamental) disciplines is assessed) and “STEP 2” (the level of professional competence in professionally oriented (clinical) disciplines is assessed), which evaluates conformity of specialists’ training quality to higher education standards and is carried out by the State Organization “Testing Board for Professional Competence Assessment of Higher Education Trainees in Medicine and Pharmacy” at the Ministry of Health of Ukraine;
- Examination in Professional English, which assesses a student’s competence in professional English and is conducted by the Testing Board at the Ministry of Health of Ukraine;
- Objective Structured Practical (Clinical) Examination, which assesses the graduate’s readiness for professional activities in accordance with the requirements of higher education standard by demonstrating practical (clinical) components of professional competence on a real object or model and is conducted by the University Examination Board.

Documents received by a graduate on the basis of successful completion of Professional Education Program

In accordance with the current legislation of Ukraine, graduates who have successfully completed Professional Education Program and have successfully passed the state certification are awarded master degree in Medicine.

Individuals who demonstrated high academic performance and received at least 75% of excellent (A) grades in all the disciplines and practical training sessions and grades B, C (“good”) in other disciplines as well as passed certification with grades A “excellent”, receive honours master degree in Medicine.

An integral part of master degree in Medicine (honours master degree in Medicine) is DIPLOMA SUPPLEMENT of the European model.

4. Matrices of correspondence of program competencies to the Education Program components

4.1. Matrix of correspondence of program competencies to the mandatory components of Education Program

<div>Program competencies</div> <div>Educational components</div>	MCG 1	MCG 2	MCG 3	MCG 4	MCG 5	MCG 6	MCP 7	MCP 8	MCP 9	MCP 10	MCP 11	MCP 12	MCP 13	MCP 14	MCP 15	MCP 16	MCP 17	MCP 18	MCP 19	MCP 20	MCP 21	MCP 22	MCP 23	MCP 24	MCP 25	MCP 26	MCP 27	MCP 28	MCP 29	MCP 30	MCP 31	MCP 32	MCP 33	MCP 34	MCP 35	MCP 36	MCP 37	MCP 38	MCP 39	MCP 40	MCP 41	MCP 42	MCP 43	PT 44	PT 45	PT 46	PT 47	
	General Competencies																																															
GC 1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 3	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 4	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 5	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 6	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 7	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 8	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 9	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 10	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 11	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 12	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 13	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 14	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 15	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

4.2. Matrix of correspondence of program competencies to the elective components of Education Program

Program competencies \ Educational components	EC 1	EC 2	EC 3	EC 4	EC 5	EC 6	EC 7	EC 8	EC 9	EC 10	EC 11	EC 12	EC 13	EC 14	EC 15	EC 16	EC 17	EC 18	EC 19	EC 20	EC 21	EC 22	EC 23	EC 24	EC 25
	<i>General Competencies</i>																								
GC 1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 3	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 4	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 5	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 6	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 7	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 8	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 9	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 10	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 11	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 12	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 13	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 14	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC 15	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Program competencies	Educational components																								
	EC 1	EC 2	EC 3	EC 4	EC 5	EC 6	EC 7	EC 8	EC 9	EC 10	EC 11	EC 12	EC 13	EC 14	EC 15	EC 16	EC 17	EC 18	EC 19	EC 20	EC 21	EC 22	EC 23	EC 24	EC 25
<i>Professional Competencies</i>																									
PC 1		+										+		+	+	+	+	+	+	+	+	+	+		+
PC 2					+							+	+		+	+	+	+	+	+	+	+	+		+
PC 3													+			+	+	+	+	+	+	+	+		+
PC 4								+				+		+										+	
PC 5											+	+	+			+					+			+	
PC 6						+		+					+		+	+	+	+	+	+	+	+	+		+
PC 7																	+			+	+	+	+		+
PC 8																	+			+	+	+	+		+
PC 9									+										+			+	+		+
PC 10										+			+						+	+			+		+
PC 11									+	+	+	+	+	+	+	+	+		+	+	+	+	+		+
PC 12					+														+	+		+	+		
PC 13						+		+						+											
PC 14								+			+	+											+	+	
PC 15														+								+			
PC 16												+	+	+	+	+	+	+	+	+	+	+	+		
PC 17							+		+			+			+									+	
PC 18								+				+					+	+	+	+	+	+	+		+
PC 19																	+		+			+	+		
PC 20								+				+					+		+			+	+		
PC 21	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PC 22														+							+	+	+		
PC 23	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PC 24					+	+				+		+	+		+	+	+	+	+	+	+	+	+		+
PC 25	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

5. Matrices providing Program Learning Outcomes (PLO) with relevant EP components

5.1. Matrix providing Program Learning Outcomes (PLO) with mandatory components of the Education Program

Educational components Program learning outcomes																																																
	MCG 1	MCG 2	MCG 3	MCG 4	MCG 5	MCG 6	MCP 7	MCP 8	MCP 9	MCP 10	MCP 11	MCP 12	MCP 13	MCP 14	MCP 15	MCP 16	MCP 17	MCP 18	MCP 19	MCP 20	MCP 21	MCP 22	MCP 23	MCP 24	MCP 25	MCP 26	MCP 27	MCP 28	MCP 29	MCP 30	MCP 31	MCP 32	MCP 33	MCP 34	MCP 35	MCP 36	MCP 37	MCP 38	MCP 39	MCP 40	MCP 41	MCP 42	MCP 43	PT 44	PT 45	PT 46	PT 47	
PLO 1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 3	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 4																		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
PLO 5																		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
PLO 6																		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
PLO 7																		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
PLO 8																		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
PLO 9																		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
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	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 23																+								+													+	+										
PLO 24	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 25	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 26																+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
PLO 27	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 28																	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
PLO 29																									+												+	+									+	+

5.2. Matrix providing Program Learning Outcomes (PLO) with elective components of the Education Program

Program learning outcomes \ Educational components	EC 1	EC 2	EC 3	EC 4	EC 5	EC 6	EC 7	EC 8	EC 9	EC 10	EC 11	EC 12	EC 13	EC 14	EC 15	EC 16	EC 17	EC 18	EC 19	EC 20	EC 21	EC 22	EC 23	EC 24	EC 25
PLO 1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 3	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 4												+	+		+	+	+			+	+	+	+		+
PLO 5																				+	+	+	+		+
PLO 6																+	+	+	+	+	+	+	+		+
PLO 7															+	+	+	+	+	+	+	+	+		+
PLO 8															+		+			+		+	+		
PLO 9															+		+			+		+	+		
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	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 23						+		+				+		+										+	
PLO 24						+																	+	+	
PLO 25	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 26														+								+		+	
PLO 27	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PLO 28														+								+			
PLO 29						+								+						+		+	+		

**MATRIX OF CORRESPONDENCE
OF STANDARD-BASED LEARNING OUTCOMES AND COMPETENCIES
VERSUS EDUCATIONAL PROGRAM COMPONENTS**

	General Competencies	Professional Competencies	Program Learning Outcome
MCG 1	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCG 2	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCG 3	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCG 4	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCG 5	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCG 6	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCP 7	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCP 8	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCP 9	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>

MCP 10	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCP 11	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCP 12	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCP 13	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCP 14	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCP 15	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO24, PLO25, PLO27</i>
MCP 16	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC4, PC5, PC13, PC16, PC17, PC21, PC23, PC25</i>	<i>PLO1, PLO2, PLO3, PLO10, PLO15, PLO21, PLO22, PLO23, PLO24, PLO25, PLO26, PLO27</i>
MCP 17	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28</i>
MCP 18	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28</i>
MCP 19	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13,</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23,</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15,</i>

	<i>GC14, GC15</i>	<i>PC24, PC25</i>	<i>PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28</i>
MCP 20	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28</i>
MCP 21	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28</i>
MCP 22	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28</i>
MCP 23	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC12, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO 23, PLO24, PLO25, PLO26, PLO27, PLO28</i>
MCP 24	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC14, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO 12, PLO 13, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28, PLO 29</i>
MCP 25	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO 12, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26,</i>

			<i>PLO27, PLO28,</i>
MCP 26	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC12, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO 11, PLO 12, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 27	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 28	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 29	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 30	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 31	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 32	<i>GC1, GC2, GC3, GC4, GC5,</i>	<i>PC1, PC2, PC3, PC4, PC5,</i>	<i>PLO1, PLO2, PLO3,</i>

	<i>GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 33	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 34	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 35	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC13, PC14, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO 19, PLO 20, PLO21, PLO22, PLO 23, PLO24, PLO25, PLO26, PLO27, PLO28, PLO 29</i>
MCP 36	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC11, PC13, PC14, PC16, PC20, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO 19, PLO 20, PLO21, PLO22, PLO 23, PLO24, PLO25, PLO26, PLO27, PLO28, PLO 29</i>
MCP 37	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 38	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9,</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10,</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6,</i>

	<i>GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 39	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC9, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 40	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 41	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC17, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
MCP 42	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC11, PC15, PC16, PC17, PC18, PC19, PC20, PC21, PC22, PC25</i>	<i>PLO1, PLO2, PLO3, , PLO16, PLO18, , PLO21, PLO22, PLO 24, PLO25, PLO26, PLO27, PLO28</i>
MCP 43	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO14, PLO15, PLO16, PLO17, PLO18, PLO21, PLO22, PLO24, PLO25, PLO26, PLO27, PLO28,</i>
PT 44	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC10, PC11, PC13, PC16, PC21, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, , PLO16, PLO17, PLO21, PLO22, PLO 24, PLO25, PLO 26, PLO27, PLO 28</i>
PT 45	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC10, PC11, PC13, PC16, PC21, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, , PLO16, PLO17, PLO21, PLO22, PLO 24, PLO25, PLO 26, PLO27, PLO 28</i>

PT 46	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC9, PC10, PC11, PC13, PC14, PC16, PC21, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO11, PLO12, PLO13, PLO14, PLO16, PLO17, PLO21, PLO22, PLO 24, PLO25, PLO 26, PLO27, PLO 28, PLO 29</i>
PT 47	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC9, PC10, PC11, PC13, PC14, PC16, PC21, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO11, PLO12, PLO13, PLO14, PLO16, PLO17, PLO21, PLO22, PLO 24, PLO25, PLO 26, PLO27, PLO 28, PLO 29</i>
EC 1	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC21, PC23, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO25, PLO27</i>
EC 2	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC21, PC23, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO25, PLO27</i>
EC 3	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC21, PC23, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO25, PLO27</i>
EC 4	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC21, PC23, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO25, PLO27</i>
EC 5	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC2, PC12, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO19, PLO20, PLO21, PLO22, PLO25, PLO27</i>
EC 6	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC6, PC13, PC17, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO19, PLO20, PLO21, PLO22, PLO23, PLO24, PLO25, PLO27, PLO29</i>
EC 7	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC18, PC20, PC21, PC23, PC25</i>	<i>PLO1, PLO2, PLO3, PLO21, PLO22, PLO25, PLO27</i>
EC 8	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13,</i>	<i>PC4, PC6, PC13, PC14, PC17, PC21, PC23, PC25</i>	<i>PLO1, PLO2, PLO3, PLO10, PLO21, PLO22, PLO23, PLO25, PLO27</i>

	<i>GC14, GC15</i>		
EC 9	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC9, PC11, PC21, PC23, PC25</i>	<i>PLO1, PLO2, PLO3, PLO14, PLO15, PLO21, PLO22, PLO23, PLO25, PLO27</i>
EC 10	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC10, PC11, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO17, PLO21, PLO22, PLO25, PLO27</i>
EC 11	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC5, PC11, PC14, PC17, PC21, PC23, PC25</i>	<i>PLO1, PLO2, PLO3, PLO14, PLO15, PLO19, PLO20, PLO21, PLO22, PLO25, PLO27</i>
EC 12	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC2, PC4, PC5, PC11, PC14, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO10, PLO21, PLO22, PLO23 PLO25, PLO27</i>
EC 13	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC5, PC6, PC10, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO19, PLO20, PLO21, PLO22, PLO25, PLO27</i>
EC 14	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC4, PC11, PC13, PC15, PC16, PC17, PC18, PC20, PC21, PC22, PC23, PC25</i>	<i>PLO1, PLO2, PLO3, PLO10, PLO16, PLO18, PLO21, PLO22, PLO23 PLO25, PLO26, PLO27, PLO28, PLO29</i>
EC 15	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC6, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO7, PLO8, PLO9, PLO16, PLO17, PLO18, PLO21, PLO22, PLO25, PLO27</i>
EC 16	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC5, PC6, PC11, PC16, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO6, PLO7, PLO16, PLO17, PLO18, PLO21, PLO22, PLO25, PLO27</i>
EC 17	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC6, PC7, PC8, PC11, PC16, PC18, PC19, PC20, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO6, PLO7, PLO8, PLO9, PLO11, PLO12, PLO13, PLO 14, PLO16, PLO17, PLO18, PLO19, PLO20, PLO21, PLO22, PLO25, PLO27</i>
EC 18	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC6, PC16, PC18, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO6, PLO7, , PLO16, PLO17, PLO18, PLO21, PLO22, PLO25, PLO27</i>
EC 19	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9,</i>	<i>PC1, PC2, PC3, PC6, PC9, PC10, PC11, PC12, PC16,</i>	<i>PLO1, PLO2, PLO3, PLO6, PLO7, PLO11,</i>

	<i>GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC18, PC19, PC20, PC21, PC23, PC24, PC25</i>	<i>PLO12, PLO13, PLO16, PLO17, PLO18, PLO21, PLO22, PLO25, PLO27</i>
EC 20	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC6, PC7, PC8, PC10, PC11, PC12, PC16, PC18, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO11, PLO12, PLO13, PLO 14, PLO16, PLO17, PLO18, PLO21, PLO22, PLO25, PLO27, PLO29</i>
EC 21	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC5, PC6, PC7, PC8, PC11, PC16, PC18, PC21, PC22, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO10, PLO16, PLO17, PLO18, PLO21, PLO22, PLO25, PLO 26, PLO27</i>
EC 22	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC6, PC7, PC8, PC9, PC11, PC12, PC15, PC16, PC18, PC19, PC20, PC21, PC22, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO11, PLO12, PLO13, PLO16, PLO17, PLO18, PLO21, PLO22, PLO25, PLO27, PLO28, PLO29</i>
EC 23	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC6, PC7, PC8, PC9, PC10, PC11, PC12, PC14, PC16, PC18, PC19, PC20, PC21, PC22, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO11, PLO12, PLO13, PLO14, PLO15, PLO16, PLO17, PLO18, PLO19, PLO20, PLO21, PLO22, PLO24, PLO25, PLO 26, PLO27, PLO29</i>
EC 24	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC4, PC5, PC14, PC17, PC21, PC23, PC25</i>	<i>PLO1, PLO2, PLO3, PLO10, PLO19, PLO20, PLO21, PLO22, PLO23, PLO24, PLO25, PLO27</i>
EC 25	<i>GC1, GC2, GC3, GC4, GC5, GC6, GC7, GC8, GC9, GC10, GC11, GC12, GC13, GC14, GC15</i>	<i>PC1, PC2, PC3, PC6, PC7, PC8, PC9, PC10, PC11, PC14, PC18, PC21, PC23, PC24, PC25</i>	<i>PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7, PLO16, PLO17, PLO18, PLO21, PLO22, PLO25, , PLO27</i>

6. Requirements for Availability of Internal Quality Assurance System in Higher Education

In accordance with the Law of Ukraine “On Higher Education”, the University has developed and implemented Internal Quality Assurance System based on the principles contained in the “Standards and Guidelines for Quality in the European Higher Education Area” of the European Association for Quality Assurance in Higher Education and National Standard of Ukraine “Quality Management Systems” (UNSS) ISO 9001: 2015, Regulations of the National Agency for Quality Assurance in Higher Education on the introduction of Internal Quality Assurance System (by the decision of NAQAHE, Minutes no. 6 of June 26th, 2019).

IFNMU Quality Management System (QMS) is certified to provide services in the field of higher education at the university level and in the field of healthcare UNSS ISO 9001: 2015 (no. UA MQ. 048-167-17 of June 12th, 2017). In 2018-2021 the University was under follow-up external supervisory audits and got confirmation that QAS of IFNMU matched the internationally recognized current certificate.

Primary ways and means of education quality assurance at IFNMU:

- education programs development solely on grounds of competence, transition to an all-European understanding of education content of in the field of healthcare;
- monitoring of trends in the development of the world education and science in order to respond timely to global challenges, changes in educational services market conditions, introduction of new technologies;
- educational programs with a focus on the needs of educational and medical establishments, practical healthcare institutions by involving them in the educational process;
- development and implementation of intensive student-centred learning technologies (individualization of learning);
- introduction of distant learning technologies in the educational process;
- assisting students to acquire communicative competence in a foreign language at the required level;
- expansion of the University participation in international programs of academic mobility of students and academic staff;
- integration with educational institutions of different levels and with medical institutions;
- involvement of employers’ representatives and leading specialists in the educational programs content development, in the educational process participation and in graduates certification;
- provision of appropriate conditions for students practical training;
- marketing of educational services and formulation of proposals for new education programs introduction, systematic analysis of employment and career growth of graduates;
- improvement of measures aimed at strengthening of the students assessment objectivity;
- control of feedback procedures between educational process participants as a necessary cornerstone component of the process of quality assurance in higher education in the field of 22 Healthcare;
- creation of organizational and technical conditions and means of assessment of

educational process quality by former graduates;

- continuous improvement of monitoring system and quality assurance of students training;
- introduction of a system for academic staff performance assessment in education programs implementation;
- participation in activities to foster a positive reputation of the institution;
- approval and implementation of advanced training programs for the academic staff at the University and other institutions.

Monitoring and Periodic Revision of Education Programs

Revision of education programs is based on the monitoring results. Modern criteria for the educational programs revision are formulated both as a result of the expected development of the field and the society's needs and as a result of feedback from external and internal stakeholders. Education programs are revised and reapproved at least once a year, usually before the beginning of the academic year.

Annual Assessment of Students

Annual assessment of students is made in accordance with the Regulations on the Organization of the Educational Process at IFNMU and is published on the website of the University.

Advanced Training of Academic Staff

Traineeship and regular advanced training of the academic staff are hold in accordance with the Ukraine's regulatory legal act and Regulations on professional development of the academic staff of IFNMU.

Advanced training results are taken into account in the rating assessment of the academic staff. Ratings of the University's teachers are covered at the meetings of Learned Council and Rectorate and brought to the attention of the departments.

Publicity of Information on Education Programs, Degrees of Higher Education and Qualification

Relevant information is covered on the official website of the University in accordance with the requirements of the Law of Ukraine "On Higher Education", "On Access to Public Information" (<https://www.ifnmu.edu.ua/uk>).

Prevention and Detection of Academic Plagiarism

Prevention of plagiarism in the University's academic environment is controlled by the "Regulations on the Detection and Prevention of Academic Plagiarism at the University" ([«Положенням про виявлення та запобігання академічного плагіату в Університеті»](#))

Recommendations for higher educational institutions on the development and implementation of the university system of academic honesty (by the decision of NAQAHE, Minutes no. 11 of October 29th, 2019).

7. References

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3. Resolution of the Cabinet of Ministers of April 29th, 2015 no. 266 “On approval of the list of branches of knowledge and specialties for which candidates for higher education are trained” [«Про затвердження переліку галузей знань і спеціальностей, за якими здійснюється підготовка здобувачів вищої освіти»](#).
4. Resolution of the Cabinet of Ministers of March 28th, 2018 no. 334 “On approval of the procedure for the implementation of the Unified State Qualification Examination for master degree in the field of knowledge “Healthcare” [«Про затвердження Порядку здійснення єдиного державного кваліфікаційного іспиту для здобувачів освітнього ступеня магістра за спеціальностями галузі знань “22 Охорона здоров’я”»](#) as amended by the Resolution of the Cabinet of Ministers of Ukraine of April 3rd, 2019 no. 308 [«Про внесення змін до Порядку здійснення єдиного державного кваліфікаційного іспиту для здобувачів ступеня вищої освіти магістр за спеціальностями галузі знань “22 Охорона здоров’я”»](#).
5. Resolution of the Cabinet of Ministers of November 23rd, 2011 no. 1341 “On approval of the National Qualifications Framework” [«Про затвердження Національної рамки кваліфікацій»](#).
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7. National Classifier of Ukraine: “Classifier of Professions” SC 003:2010 approved by Order no. 327 of July 28th, 2010 [Класифікатор професій ДК 003:2010](#).
8. National Classification Framework approved by Resolution of the Cabinet of Ministers of Ukraine of November 23rd, 2011 no. 1341 [Національна рамка кваліфікацій](#).
9. Instructional guidelines for the development of higher education standards approved by Order of the Ministry of Education and Science of Ukraine of June 1st, 2017 no. 600 (as amended) [Методичні рекомендації щодо розроблення стандартів вищої освіти](#).
10. Decree of the President of Ukraine “Issues of European and Euro-Atlantic Integration” of April 20th, 2019 no. 155/2019 [«Питання європейської та євроатлантичної інтеграції»](#).
11. Order of the Ministry of Education and Science of Ukraine of April 30th, 2020 no. 584 “On amendments to the guidelines for the development of higher education standards” [«Про унесення змін до методичних рекомендацій щодо розроблення стандартів вищої освіти»](#).
12. Standard of higher education in specialty 222 Medicine in the field of knowledge 22 Healthcare of the second (master’s) level of higher education approved by Order of the Ministry of Education and Science of Ukraine of November 8th, 2021 no. 1197 [Стандарт вищої освіти спеціальності 222 Медицина галузі знань 22 Охорона здоров’я для другого \(магістерського\) рівня вищої освіти](#).

Appendix 1
List 1 (Syndromes and Symptoms)

1. Amenorrhea
2. acromegaly
3. anemic syndrome
4. anuria and oliguria
5. arterial hypertension
6. arterial hypotension
7. chest pain
8. abdominal pain
9. back and limb pain
10. perineal pain
11. sore throat
12. vomiting
13. broncho-obstructive syndrome
14. bulbar syndrome
15. pleural effusion
16. paranoid-hallucinatory syndrome
17. fever
18. hemorrhagic syndrome
19. hypoglycemia
20. hyperglycemia
21. exanthema, enanthema
22. hepatomegaly and hepatolienal syndrome
23. headache
24. dysuria
25. dysmenorrhea
26. dyspepsia
27. dysphagia
28. diarrhea
29. jaundice
30. dyspnea
31. suffocation
32. constipation
33. dizziness
34. stunted growth
35. cardiomegaly
36. cough
37. bowel obstruction
38. coma
39. external hemorrhage
40. internal hemorrhage
41. hemoptysis
42. galactorrhea
43. lymphadenopathy
44. meningeal syndrome
45. uterine bleeding
46. edema syndrome
47. obesity (+body weight)
48. paresis, paralysis
49. sexual precocity
50. cortical bone fractures
51. tension pneumothorax (closed)

52. tension pneumothorax (open)
53. valvular pneumothorax
54. polyuria
55. portal hypertension
56. speech disorder (aphasia)
57. heart rhythm and conduction disorders
58. sudden cardiac arrest
59. disorders of consciousness
60. itchy skin
61. urinary syndrome
62. dementia syndrome
63. dehydration syndrome
64. maldigestion syndrome
65. thirst
66. stridor
67. articular syndrome
68. convulsions
69. weight loss
70. cyanosis
71. partial or complete vision loss
72. partial or complete hearing loss
73. gastrointestinal bleeding

List 2 (Syndromes)

I) Diseases of blood and blood-forming organs, disorders involving immune mechanism

1. anemia
2. hemolytic disease of the newborn
3. hemophilia
4. leukemia
5. lymphoma
6. congenital (Bruton Disease, Aldrich-Wiskott syndrome) and acquired immunodeficiency disorders
7. neonatal sepsis
8. surgical sepsis
9. idiopathic thrombocytopenic purpura
10. chronic radiolesion

II) Mental and behavioral disorders:

11. bipolar affective disorder
12. acute psychosis, including alcoholic delirium
13. epilepsy
14. neurotic disorders
15. personality disorders
16. schizophrenia

III) Nervous system disorders:

17. intracranial injury
18. meningitis, encephalitis
19. migraine and other types of headaches
20. perinatal encephalopathy
21. autonomic nervous system disorders
22. cerebrovascular disturbance

23. vertebrogenous diseases of the nervous system, neuropathies and polyneuropathies
24. multiple sclerosis
25. chronic occupational disturbances (hand-arm vibration syndrome, occupational dyskinesia)
26. strokes (ischemic, hemorrhagic)

Eye Diseases

27. blepharitis
28. glaucoma
29. conjunctivitis
30. intraocular foreign body
31. eye injuries
32. retinopathy
33. exophthalmia

Ear, Nose and Throat Diseases

34. laryngitis
35. otitis
36. paratonsillar abscess
37. sinusitis
38. tonsillitis
39. ear, nose and throat injuries

IV) Cardiovascular system disorders:

40. aortic aneurysm
41. atherosclerosis
42. varicose vein in legs
43. congenital heart defect
44. secondary hypertension
45. acute occlusion of great and peripheral arteries
46. endocarditis

47. essential and secondary arterial hypertension
48. coronary heart disease
49. carditis
50. cardiomyopathy
51. pulmonary heart
52. acquired heart disease
53. obliterating endarteritis
54. pericarditis
55. heart rhythm and conduction disorders
56. heart failure
57. injuries of the heart and blood vessels
58. pulmonary embolism
59. phlebitis, thrombophlebitis

V) Respiratory and mediastinal diseases:

60. asphyxia
61. bronchial asthma
62. bronchitis
63. bronchiectasis
64. bronchopulmonary dysplasia
65. congenital malformations of the respiratory organs
66. acute respiratory distress syndrome
67. respiratory failure
68. infectious-destructive pulmonary disease
69. pulmonary failure
70. mediastinitis
71. cystic fibrosis
72. lung and mediastinum neoplasms
73. pleuritis
74. pneumoconiosis
75. pneumonia
76. pneumothorax
77. respiratory distress syndrome and neonatal pneumonia
78. foreign body in respiratory tract
79. chest injuries (closed, open)
80. chronic obstructive pulmonary disease

VI) Diseases of digestive organs:

81. rectal prolapse
82. peptic ulcer disease
83. congenital malformations of digestive organs
84. gastroesophageal reflux disease, esophagitis
85. gastritis, duodenitis
86. acute and chronic hepatitis
87. acute intestinal obstruction
88. acute and chronic appendicitis
89. acute and chronic pancreatitis
90. benign esophageal diseases
91. enteritis, colitis
92. inflammatory diseases of rectum and perianal region
93. incarcerated and nonincarcerated hernias
94. neoplasms of esophagus, stomach, colon, liver and pancreas

95. gastric and duodenal peptic ulcers
96. peritonitis
97. hollow viscus perforation
98. liver failure
99. malabsorption syndrome
100. pyloric stenosis
101. abdominal injuries (superficial, open)
102. gastrointestinal functional disorders
103. postgastrectomy dumping syndrome
104. cholecystitis, cholangitis, cholelithiasis, choledocholithiasis
105. liver cirrhosis
106. gastrointestinal bleeding

VII) Genitourinary system diseases:

107. renal amyloidosis
108. balanitis, balanoposthitis
109. congenital malformations of the urinary system
110. glomerulonephritis
111. dysmetabolic nephropathy
112. nephrotic syndrome
113. kidney, urinary tract and prostate neoplasms
114. pyelonephritis
115. prostatitis
116. urolithiasis
117. tubulointerstitial nephritis
118. urethritis
119. chronic kidney disease
120. cystitis

VIII) Skin and subcutaneous tissue diseases:

121. allergodermatoses (dermatitis, toxidermia, eczema)
122. bacterial diseases of the skin and subcutaneous tissue, pyoderma
123. pyoinflammatory diseases of fingers and hands
124. pyoinflammatory diseases in children and newborns
125. mycosis
126. burns and frostbite
127. parasitic skin diseases (scabies, pediculosis)
128. psoriasis
129. vesicular dermatosis
130. specific surgical infection (anaerobic clostridial and non-clostridial)

IX) Diseases of musculoskeletal system and connective tissue:

131. ankylosing spondylitis
132. congenital and acquired malformations of the musculoskeletal system
133. acute rheumatic fever

134. dermatomyositis and polymyositis
135. musculoskeletal system neoplasms
136. osteoarthritis
137. osteomyelitis
138. gout
139. multiple trauma
140. reactive arthritis
141. rheumatoid arthritis
142. systemic scleroderma
143. systemic lupus erythematosus
144. systemic vasculitis (nodular polyarteritis, hemorrhagic vasculitis, hypersensitive vasculitis)
145. selected fractures of the bones of the shoulder, forearm, hand, thigh, leg, foot
146. pelvic injury
147. injuries to the spine
148. injuries of major joints (hip, knee, ankle, elbow joints)
149. chronic rheumatic disease
150. juvenile rheumatoid arthritis

X) Endocrine, nutritional and metabolic diseases:

151. acromegaly and pituitary gigantism
152. hypothyroidism
153. oligotrophy, protein-energy malnutrition
154. hypopituitarism
155. thyrotoxicosis
156. endemic goitre
157. diabetes insipidus
158. nodular goiter, thyroid tumors
159. obesity
160. congenital adrenal cortical hyperplasia
161. calcium-phosphorus and vitamin D metabolic disorders
162. genetic syndromes with endocrine implications: Turner syndrome, Russell-Silver syndrome, Prader-Willi syndrome, Laron syndrome
163. thyroiditis
164. Cushing syndrome and disease
165. chronic adrenal insufficiency
166. diabetes mellitus
167. hypoparathyroidism
168. hyperparathyroidism
169. adrenal tumors
170. organic (including congenital) hyperinsulinism
171. neuro-endocrine tumors
172. pituitary tumors
173. precocious sexual development
174. hypogonadism
175. cryptorchidism
176. disorders of sexual differentiation

177. Klinefelter syndrome
178. nanism in a child born SGA

XI) Infectious and parasitic diseases:

179. bacterial food poisoning
180. erysipelas
181. botulism
182. viral hepatitis
183. varicella
184. congenital neonatal infections
185. helminthiasis
186. herpes virus infection
187. influenza and other acute respiratory viral infections
188. diphtheria
189. infectious mononucleosis
190. candidiasis
191. whooping cough
192. bacterial intestinal infections
193. viral intestinal infection
194. measles
195. tick-borne viral encephalitis
196. rubella
197. leptospirosis
198. malaria
199. meningococcosis
200. highly dangerous virus infection
201. mumps
202. poliomyelitis
203. tetanus
204. protozoal infections
205. rickettsial disease
206. anthrax
207. rabies
208. scarlet fever
209. tuberculosis of various sites
210. Lyme disease
211. disease caused by human immunodeficiency virus (HIV)
212. chlamydial infections
213. cholera
214. plague

- Sexually transmitted infectious diseases:

215. gonococcal infection
216. syphilis

XII) Diseases of the female reproductive system:

pathologic pregnancy:

217. multiple pregnancy
218. emesis gravidarum
219. extragenital pathology and pregnancy
220. fetal distress in pregnancy
221. intrauterine growth restriction
222. immune conflict in pregnancy
223. molar pregnancy

224. placenta previa
225. abruptio placentae
226. premature delivery and post-term pregnancy

227. позапаткова вагітність
228. preeclampsia and eclampsia

229. spontaneous abortion
- labour and postpartum pathologies:*

230. abnormal uterine contraction
231. pelvic abnormalities, including cephalopelvic disproportion
232. fetal distress in pregnancy
233. intrapartum and postpartum hemorrhage
234. fetal malposition and presentation
235. postpartum sepsis
236. uterus and birth canal injuries

gynecological diseases:

237. abnormal uterine bleeding
238. ovarian apoplexy
239. infertility
240. congenital malformations of the female reproductive organs
241. benign mammary dysplasia
242. benign and precancerous neoplasms of the female reproductive organs
243. endometriosis
244. inflammatory diseases of the female reproductive organs
245. malignant tumors of the female reproductive organs
246. mastitis
247. mammary neoplasms

List 3 (Emergencies)

- | | |
|--|---|
| 1. asphyxia (including neonatal) | 19. acute blood loss syndrome, including in field conditions and in emergencies |
| 2. hypertensive crisis | 20. cardiac arrest |
| 3. hypoglycemia (come) | 21. collapse |
| 4. acute respiratory failure | 22. consciousness impairment and coma |
| 5. acute urinary retention | 23. renal colic |
| 6. acute renal failure | 24. biliary colic |
| 7. acute kidneys injury | 25. acute anaphylaxes |
| 8. acute hepatic failure | 26. acute heart arrhythmia |
| 9. acute cardiac failure | 27. cold injury, including in field conditions |
| 10. acute poisoning, including chemical warfare | 28. heat injury, including in field conditions |
| 11. acute psychosis | 29. venous and arterial thromboembolisms |
| 12. acute coronary syndrome | 30. convulsive disorder |
| 13. acute radiation and chemical traumas, including in field conditions and in emergencies | 31. drowning |
| 14. acute brain failure | 32. strangulation asphyxia |
| 15. diabetic coma, including ketoacidotic, hyperosmolar, lacticidemic | 33. normal birth |
| 16. electric injury | 34. shocks |
| 17. status epilepticus | 35. snakes, insects and animal bites |
| 18. acute bleeding | 36. penetrating injury, including in warfare |
| | 37. burns, including in field conditions |
| | 38. airway, gastrointestinal tract, ENT-organs, and eye foreign bodies |

List 4 (Laboratory and Instrumental Examinations)

1. pleural fluid analysis
2. ascitic fluid analysis
3. synovial fluid analysis
4. Zymnitsky type urinalysis
5. Nechiporenko type urinalysis
6. blood and urine alfa amylase activity, fecal elastase
7. proteins of blood and its fracture, C-reactive protein
8. blood glucose, glycosylated hemoglobin
9. oral glucose tolerance test
10. lipids and lipoproteins of blood and its fracture
11. blood hormones

12. blood serum ferritin, iron and copper
13. creatinine, urea of blood and urine, glomerular filtrate rate
14. blood electrolytes
15. blood aminotransferase
16. total bilirubin of blood and its fractions
17. coagulogram
18. blood uric acid
19. blood alkaline phosphatase
20. histomorphologic examination of lymph node biopsy
21. histomorphologic examination of solid organs biopsy
22. histomorphologic examination of mucous membranes biopsy
23. histomorphologic examination of muscles and skin biopsy
24. histomorphologic examination of placenta biopsy
25. exploration of the indoor environment (indicators of microclimate, natural and artificial lighting, bacteriological and chemical air pollution)
26. external respiration function test
27. standard 12-lead ECG
28. bronchoscopy
29. endoscopy of the digestive tract
30. echocardiography and Doppler imaging
31. fecalysis
32. complete blood count
33. clinical urinalysis
34. urinary sugar and acetone
35. cerebrospinal fluid study
36. sternal punctate test
37. sputum examination
38. immunological blood profile
39. serum tests in infectious diseases
40. viral infections express tests
41. amplification assays in infectious diseases (PCR, LCR)
42. serum tests in autoimmune diseases
43. chemical and bacteriological studies of the human environment (air, water, soil)
44. microbiological study of biological fluids and secretions
45. radiation measurement (sound, vibration, ionizing), individual radiometry
46. instrumental visualization of the thyroid gland
47. radiopaque angiography
48. instrumental techniques to visualize abdominal cavity
49. instrumental techniques to visualize thoracic cavity
50. instrumental techniques to visualize the genitourinary system
51. instrumental techniques to visualize a fetus
52. instrumental techniques to visualize the skull, spinal column, spinal cord, bones, and joints
53. instrumental techniques to visualize mammary gland
54. tuberculinodiagnosis
55. multiple-point fraction analysis of bile and pH test of the stomach and esophagus
56. chemical, organoleptic, bacteriological food and potable water research
57. cervical cytology test
58. measurement of ergonomic indicators of difficulty and intensity of work

List 5 (Medical Procedures)

1. to make closed-chest massage
2. to perform artificial respiration
3. to perform defibrillation using manual automatic defibrillator cardioverter
4. to register standard 12-lead ECG
5. to perform temporary hemostasis
6. to perform initial surgical wound debridement, to apply a bandage, to remove sutures, including in field conditions
7. to apply arresting bleeding tourniquet and use arresting bleeding medications, including in field conditions
8. to insert nasogastric and orogastric tube
9. to carry out transport immobilization
10. to administer drugs (intravenous, bolus, drip, intraosseous administration) , including in field conditions
11. to provide peripheral venous access
12. to measure blood pressure
13. to restore airway patency
14. to catheterize the urinary bladder using a soft catheter
15. to perform anterior nasal packing
16. to make clinical examination of the visual organ and ENT organs
17. to perform the procedure of early skin-to-skin contact and early breastfeeding
18. to perform digital rectal examination and rectal examination using a rectal speculum
19. to perform digital prostate examination
20. to perform clinical examination of mammary glands
21. to perform pleurocentesis
22. to perform abdominal paracentesis through the posterior arch
23. to type a blood sample and Rh factor
24. to transfuse blood and blood substitutes
25. to perform bimanual examination and speculum examination of a woman
26. to perform pelvimetry
27. to perform external (Leopold maneuvers) and internal obstetric examination
28. to perform fetus auscultation
29. to take swabs for bacterioscopic, bacteriological, cytological examination
30. to palpate the thyroid gland
31. to examine and evaluate the external genitalia of boys
32. to assess the state of children's sexual development