Appendices to the Regulation of the Minister of Science and Higher Education of 26 July 2019 (it. 1573)

Appendix No. 1

TEACHING STANDARDS FOR THE DOCTOR OF MEDICINE (MD) PROGRAM FULL-TIME MASTER'S PROGRAM

I. ORGANISATION OF TEACHING

1. GENERAL REQUIREMENTS

1.1. This standard applies to the teaching preparing for the doctor of medicine (MD), offered at medical studies, hereinafter referred to as the 'studies'

1.2. The studies are of the long-cycle, master degree type.

1.3. The studies take 12 semesters.

1.4. The number of class and practical training hours should not be lower than 5700.

1.5. The ECTS score required to complete the studies should not be lower than 360.

1.6. Medical studies match the scientific discipline of medical science, which is their lead discipline.

1.7. The studies are of the general academic profile.

2. CLASSES AND CLASS GROUPS

2.1. Teaching is organised in:

1) classes or groups of classes corresponding to individual aspects of the scientific discipline the field of studies matches (e.g. anatomy, microbiology, surgery, ophthalmology);
2) groups of classes combining two or more aspects of the scientific discipline the field of studies matches (e.g. internal diseases and laboratory diagnostics, contagious diseases and microbiology);
3) multidisciplinary class groups devoted to specific issues (e.g. pain – the mechanism and treatment, auto-immunological diseases).

2.2. The syllabus comprises classes and groups of classes connected with the research pursued at the University in the discipline of science the field of studies match, where the classes/class groups are allocated ECTS points representing more than 50% of the ECTS score necessary to complete the studies; moreover, it envisages student participation in classes preparing for the pursuance of or participation in scientific research.

3. MINIMUM NUMBER OF HOURS OF ORGANISED CLASSES AND ECTS POINTS

Groups of classes leading to the attainment of specific learning outcomes	No. of hours	ECTS points
A. Morphological sciences	300	25
B. Scientific basis of medicine	525	43
C. Pre-clinical sciences	525	43
D. Behavioural and social sciences with elements of professionalism	240	12
E. Non-surgical clinical sciences	1060	65
F. Surgical clinical sciences	900	50
G. Legal and organisational aspects of medicine	100	6
H. Practical clinical training (30 weeks) and examinations	900	60
I. Medical student internship (20 weeks)	600	20
Total	5150	324

3.1. The syllabus is to be structured so as to enable allocation of a repetitive value expressed in ECTS points to groups of classes.

3.2. When teaching clinical sciences (class groups E and F) the students are provided direct access to the patients, including outpatients suffering from acute and chronic diseases included in the curriculum of individual classes or groups of classes.

3.3. The university has no fewer than 550 class hours (36 ECTS points) at its own disposal, which can be offered as courses complementing knowledge, skills, or social competencies, provided

that the syllabus will allow the student to select the classes allocated ECTS points representing no less than 3% of the ECTS score necessary to complete the studies.

3.4. No more than half the class hours enabling the attainment of the learning outcomes in group D is devoted to the teaching of the English language. Additional class hours available for the teaching of the English language or another foreign language may be offered out of the hours left at the university's disposal. In the event the total number of class hours devoted to foreign languages exceeds 200, the university shall increase the total number of class hours in the syllabus by that number.

3.5. Physical education is compulsory in the full time mode of studies, and the minimum time is 60 hours. The classes are not allocated any ECTS points.

3.6. The syllabus should enable the students to obtain no fewer than 5 ECTS points for classes in humanities or social sciences.

3.7. The ECTS points attainable in the mode making use of remote teaching methods and techniques may not be higher than 20% of the ECTS score necessary to complete the studies.

4. PRACTICAL CLINICAL TRAINING IN YEAR VI OF STUDIES

4.1. Practical clinical training in year VI of studies comprises classes aimed at the attainment of the learning outcomes in class groups E and F, and takes the form of seminars and practical classes at clinics, hospital wards, or in simulated clinical conditions, in the following number of hours:

Specialty	No. of hours	ECTS points
Internal diseases	240	16
Paediatrics	120	8
Surgery	120	8
Gynaecology and obstetrics	60	4
Psychiatry	60	4
Emergency medicine	60	4

Family medicine	60	4
Student-selected specialty	180	12
Total	900	60

4.2. The classes aimed at the attainment of the learning outcomes in class groups E and F are held in line with the framework curricula defined in the secondary legislation promulgated based on section 5(14) of the Act on the Physician's and Dentist's Professions of 5 December 1996 (Journal of Laws 2019: it. 537, as amended).

5. STUDENT INTERNSHIPS

5.1. Student internships intended for the students' perfecting their professional skills last as follows:

Scope of internship training	No. of weeks
Patient care	4
Basic health care (family medicine)	3
Emergency attendance	I
Internal diseases	4
Intensive care	2
Paediatrics	2
Surgery	2
Gynaecology and obstetrics	2
Total	20

5.2. Student internship training is taken in the holiday season. Internship is aimed at the attainment of selected learning outcomes. The internship programme, its form and dates, as well as the method of verifying the attained learning outcomes are defined by the university.

6. THE INFRASTRUCTURE NECESSARY TO OFFER THE EDUCATION

6.1. The teaching process is conducted using the infrastructure which enables the attainment of the learning outcomes, especially a dissecting-room and a microscope laboratory, and allows for

giving courses in all clinical specialties. Courses in clinical sciences (class groups E and F) are held at health care entities which because of their specificity and the number of health services provided enable the students to attain the learning outcomes in clinical sciences.

6.2. Practical clinical training and internships are conducted using the infrastructure of the university and the health care entities with which the university has signed agreements or accords in this respect and include simulated clinical conditions. Practical clinical training and internships are held at health care entities which offer health services in hospital-based treatment, especially at hospitals the specific profile of which enables the attainment of the learning outcomes, at health care entities offering specialist or basic health services to outpatients, units of the State Emergency Medical System, and hospices.

II. THE TEACHING STAFF

The teaching aimed at the attainment of the learning outcomes in individual groups of classes is entrusted to academic teachers or other persons holding professional or scientific qualifications and experience in the area their classes concern, provided that courses in class groups E and F are held by academic teachers or other persons having a record of achievements in research, holding the licence to practise the physician's profession and the title of a specialist or specialisation in the area of medicine matching the course given, or by persons holding the licence to practise the physician's profession, who have completed the basic module in their specialist training or have completed year 3 in their specialist training in a uniform specialisation in the respective medical discipline, provided they are issued a positive reference letter from the head of specialisation and give classes jointly with other persons with academic achievements or clinical experience in the area of the course.

III. LEARNING OUTCOMES

1. GENERAL LEARNING OUTCOMES

1.1. In terms of knowledge, the graduate knows and understands:

1) the development, structure, and functions of the human organism in normal and pathological conditions;
2) the symptoms and courses of diseases;
3) the diagnostic and therapeutic procedures proper in specific medical conditions;
4) the ethical, social, and legal conditions of practising the medical profession and the principles of promoting health, and his/her knowledge is founded on scientific proof;
5) the methods of conducting scientific research.

1.2. In terms of skills, the graduate can:

1) recognise medical problems and determine the priorities of medical procedure;
2) recognise life-threatening conditions and those which require immediate medical intervention;
3) plan the diagnostic procedure and interpret its results;
4) implement proper and safe therapeutic procedure and anticipate its effects;
5) plan his/her own education, continue advancing his/her education to keep knowledge up to date;
6) inspire others to engage in the learning process;
7) communicate with the patient and his/her family in the atmosphere of trust and recognition of the patient's needs, and communicate unfavourable news;
8) communicate with other team members and share knowledge;
9) assess research results critically and substantiate his/her position as appropriate.

1.3. In terms of social skills, the graduate is prepared to:

1) establish and maintain a deep and respect-based contact with the patient, and demonstrate an understanding for differences in world views and cultures;
2) be guided by the good of the patient;
3) abide by medical secrecy and respect the patient's rights;
4) take patient-affecting actions based on the rules of ethics, aware of social conditions and limitations imposed by the illness;

5) perceive and recognise own limitations, and assess his/her deficits and educational needs;
6) propagate health-promoting behaviour;
7) use objective sources of information;
8) formulate conclusions based on own measurements and observations;
9) implement the principles of professional companionship with respect to his/her peers and of cooperation on a team of specialists including representatives of other medical professions, also in multicultural and multinational environment;
10) formulate opinions on various aspects of professional activities;
11) assume responsibility inherent in the decisions made in professional activities, including the responsibility for own safety and the safety of others.

2. DETAILED LEARNING OUTCOMES

A. MORPHOLOGICAL SCIENCES (including anatomy, histology, embryology)

In terms of knowledge, the graduate knows and understands:

A.W1. anatomic, histological, and embryological nomenclature in the Polish and English languages;

A.W2. the structure of the human body in terms of its topography (upper and lower limbs, the chest, abdomen, pelvis, back, neck, head) and functions (the osteoarticular system, muscular system, cardiovascular system, respiratory system, digestive system, urinary system, procreation systems, nervous system and sense organs, the common integument);

A.W3. the topographic relations between individual organs;

A.W4. the basic cell structures and their functional specialisations;

A.W5. the microarchitecture of tissues, extracellular matrix, and organs;

A.W6. the stages in the development of the human embryo, the composition and functions of the foetal membranes and the placenta, the stages in the development of individual organs, and the impact of harmful factors on the development of the embryo and foetus (teratogenic).

In terms of skills, the graduate can:

A.Ul. operate an optical microscope, including the use of immersion;

A.U2. recognise the histological structures corresponding to organs, tissues, cells, and cell structures in the images of the optical or electronic microscope, describe and interpret their structure and the relationships between their composition and function;

A.U3. explain the anatomical grounds of physical examination;

A.U4. formulate conclusions as to the relations between anatomical structures based on intravital diagnostic tests, especially of the radiological type (plain film, tests with contrast agents, computer tomography, and nuclear magnetic resonance);

A.U5. use the anatomic, histological, and embryological nomenclature in speech and writing.

B. SCIENTIFIC BASIS OF MEDICINE (including: biophysics, molecular biology, biochemistry with elements of chemistry, physiology with elements of clinical physiology, cytophysiology, IT technology and bio-statistics)

In terms of knowledge, the graduate knows and understands:

B.W1. the water and electrolyte management in biological systems;

B.W2. the acid-base balance and the buffer action mechanism, and their significance in systemic homeostasis;

B.W3. the therms of: solubility, osmotic pressure, isotonia, colloidal solutions, and the Gibbs-Donnan equilibrium;

B.W4. the basic reactions of inorganic compounds in aqueous solutions;

B.W5. the physical laws describing the flow of fluids, the factors affecting the vascular resistance to blood flow;

B.W6. natural and artificial sources of ionising radiation and its impact on the matter;

B.W7. the functioning of the sense organs on the physico-chemical, and molecular levels;

B.W8. the physical grounds of non-invasive imaging methods;

B.W9. the physical grounds of selected therapeutic techniques, including ultrasounds and irradiations;

B.W10. composition of simple organic compounds, elements of the macromolecules present in cells, extracellular matrix, and body fluids;

B.W11. the structure of lipids and polysaccharides, and their functions in cell and extracellular structures;

B.W12. the primary, secondary, tertiary, and quaternary structures of proteins, post-translation and functional modifications of proteins and their significance;

B.W13. the functions of nucleotides in the cell, the primary and secondary DNA and RNA structures, and the structure of chromatin;

B.W14. the functions of the human genome, transcriptome, and proteome, and the basic methods employed in testing them, the processes of the DNA replication, repair, and recombination, the processes of DNA, RNA, and protein transcription, translation, and degradation, and the concepts of gene expression regulation;

B.W15. the basic catabolic and anabolic pathways, the methods of their regulation, and the impact of genetic and environmental factors thereon;

B.W16. the metabolic profiles of the key organs and systems;

B.W17. the methods of intercellular communication and of the communication between the cell and the extracellular matrix, and the signal transduction pathways in cells, plus examples of disturbances in the processes leading to the growth of neoplasms and other diseases;

B.W18. the following processes: the cell cycle, proliferation, cell differentiation and ageing, apoptosis and necrosis, and their impact on the functioning of the organism;

B.W19. the basics of the stem cell issues and stem cell application in medicine;

B.W20. the basis of nervous system stimulation and conduction, including higher level nervous activity, as well as physiology of striated and smooth muscles plus blood functions;

B.W21. the activity and regulation mechanisms of all organs and systems in the human body, including the cardiovascular system, respiratory tract, digestive system, urinary tract, and integuments, and the mutual interdependencies between them;

B.W22. the course and regulation of the procreation functions in women and men;

B.W23. the mechanism of the organism ageing;

B.W24. the basic quantitative parameters describing the efficiency of individual systems and organs, including the standard ranges and the demographic factors affecting the parameter values;

B.W25. the relationship between factors disturbing the balance of the biological processes, and physiological and pathophysiological changes;

B.W26. the basic IT and bio-statistical tools employed in medicine, including medical databases, spreadsheets, and basic of computer graphics;

B.W27. the basic methods of statistical analysis employed in population and diagnostic surveys;

B.W28. the options offered by the contemporary tele-medicine as a tool supporting the physician at work;

B.W29. the principles of conducting scientific research, observational and experimental studies, and *in vitro* tests contributing to the advancement of medicine.

In terms of skills, the graduate can:

B.U1. use the knowledge of the laws of physics to explain the impact of external factors such as the temperature, acceleration, pressure, electromagnetic field, and ionising radiation on the organism and its components;

B.U2. assess the harmfulness of a specific dose of ionising radiation and follow the rules of radiological protection;

B.U3. calculate the molar and percent concentrations of compounds, and the concentrations of substances in isoosmotic, single and multiple-component solutions;

B.U4. calculate the solubility of inorganic compounds, identify the chemical factors determining solubility or insolubility of organic compounds and its practical significance in dietetics and therapy;

B.U5. determine the pH of a solution and the impact of the pH fluctuations on inorganic and organic compounds;

B.U6. anticipate the direction of biochemical processes depending on the cell energy state;

B.U7. perform simple functional tests to assess the human organism as a stable regulation system (load and stress tests) and interpret the figures picturing the basic physiological variables;

B.U8. apply basic laboratory techniques such as qualitative analysis, titration, colorimetry, pH-metry, chromatography, electrophoresis of proteins and nucleic acids;

B.U9. operate simple metering instruments and assess the exactitude of the measurements taken;

B.U10. use databases, including those available on the Internet, and find the necessary information with the available tools;

B.U11. select the appropriate statistical tests, conduct basic statistical analyses, employ appropriate methods to present the results, interpret the results of meta-analysis, and carry out a survival probability analysis;

B.U12. explain the difference between prospective, retrospective, randomised, and clinical control studies, case descriptions, and experimental tests, and arrange them by credibility and quality of the research evidence;

B.U13. plan and perform simple scientific studies, interpret its results, and draw conclusions.

C. PRECLINICAL SCIENCES (including: genetics, microbiology, immunology, pathology, pharmacology and toxicology, elements of pathophysiology)

In terms of knowledge, the graduate knows and understands:

C.W1. the basic therms of genetics;

C.W2. the phenomena of gene coupling and interaction;

C.W3. the karyotype of the normal human and various sex determination types;

C.W4. the chromosome composition and the molecular background of mutagenesis;

C.W5. the rules determining inheritance of various numbers of traits, inheritance of quantitative traits, independent inheritance of traits, and extranuclear inheritance of genetic information;

C.W6. genetic determinants of the human blood group and the serological conflict of Rh incompatibility;

C.W7. autosome and heterosome aberrations as the source of diseases, including oncogenesis and tumours;

C.W8. the factors determining the primary and secondary genetic balance in the population;

C.W9. the basics of diagnosing gene and chromosome mutations responsible for hereditary and acquired diseases, including neoplasms;

C.W10. the benefits and threats stemming from the presence of genetically modified organisms (GMOs) in the ecosystem;

C.Wl1. the genetic mechanisms of drug resistance acquisition by microbes and cancer cells;

C.W12. microbes, including microbial pathogens present in the physiological flora;

C.W13. epidemiology of viral and bacterial infections and of fungal and parasitic infections, in recognition of their geographic limits;

C.W14. the impact of abiotic and biotic environmental factors (viruses, bacteria) on the human organism, human populations, and their routes of entry into the human organism;

C.W15. the consequences of exposure of the human organism to various chemical and biological factors, and the prevention principles;

C.W16. the forms or developmental stages of selected parasitic fungi, protozoa, helminths, and arthropods invasive for humans, in recognition of their geographic limits;

C.W17. the working principle of the parasite-host relationship and the symptoms of parasite-induced diseases;

C.W18. the symptoms of iatrogenic infections, the routes of infections spreading, and the pathogens causing changes in individual organs;

C.W19. the basics of microbiological and parasitological diagnostics;

C.W20. the basics of disinfection, sterilisation, and aseptic procedure;

C.W21. the basics of the immune system development and the mechanisms of its functioning, including specific and non-specific mechanisms of humoral and cellular immunity;

C.W22. the major histocompatibility system;

C.W23. the types of hypersensitivity reactions, immunodeficiencies, and fundamentals of immunomodulation;

C.W24. the issues of immunology of tumours;

C.W25. the genetic criteria of donor and recipient selection, and basics of transplantation immunology;

C.W26. the pathomorphological nomenclature;

C.W27. the basic mechanisms of cell and tissue damage;

C.W28. the clinical course of specific and non-specific inflammations, and the tissue and organ regeneration processes;

C.W29. the definition and pathophysiology of shock and in particular differentiation of the causes of shock and multiple-organ failure;

C.W30. the etiology of haemodynamic disorders, regressive and progressive changes;

C.W31. the issues of specific organ pathologies, macro and microscopic images, and the clinical course of pathomorphological changes in individual organs;

C.W32. the impact of the developing pathological changes on the topographically neighbouring organs;

C.W33. external and internal pathogens, modifiable and non-modifiable;

C.W34. the clinical forms of most frequent diseases of individual systems and organs, metabolic diseases, and the water-and-electrolyte, hormonal, and acid-base management disorders;

C.W35. individual groups of therapeutic agents;

C.W36. the main modes of action of medicinal drugs and their transformations in the organism depending on the age;

C.W37. the impact of disease processes on medicinal drug metabolism and their elimination;

C.W38. the basic principles of pharmacotherapy;

C.W39. the major side effects of medicinal drugs, including the effects of their interaction;

C.W40. the problem of resistance to medicinal drugs, including multi-drug resistance;

C.W41. the indications for genetic tests aimed at individualising pharmacotherapy;

C.W42. the main directions of developing therapies, especially the options of cell, gene, and targeted therapies in specific diseases;

C.W43. the basic therms of general toxicology;

C.W44. the groups of medicinal drugs which may lead to poisoning, if abused;

C.W45. the symptoms of the most frequently encountered acute poisoning, including poisoning with alcohol, drugs, and other psychoactive substances, heavy metals, and selected groups of medicinal drugs;

C.W46. the basic rules of the diagnostic procedure in poisoning;

C.W47. the impact of oxidative stress on cells, and its role in pathogenesis of diseases and the ageing processes;

C.W48. the consequences of vitamin or mineral deficiency and their excess in the organism;

C.W49. the enzymes engaged in digestion, the mechanism of producing hydrochloric acid in the stomach, the role of bile, the course of absorption of digestion products;

C.W50. the consequences of improper nutrition, including long starvation, excessively abundant meals, and imbalanced diet, plus digestive disorders and disturbed absorption of digestion products;

C.W51. the action mechanism of hormones.

In terms of skills, the graduate can:

C.U1. analyse the genetic interbreeds and pedigrees of human traits and diseases, and assess the risk that the child will be borne with chromosomal aberrations;

C.U2. identify the indications for prenatal tests;

C.U3. make decisions about the need to have cytogenetic and molecular tests performed;

C.U4. take morphometric measurements, analyse the morphogram, and record the disease karyotypes;

C.U5. asses the risk that a specific disease will manifest itself in the offspring, based on family predispositions and the impact of environmental factors;

C.U6. assess the environmental risks and employ the basic methods enabling the discovery of harmful (biological and chemical) factors in the biosphere;

C.U7. recognise the most frequent human parasites based on their structure, life cycles, and pathological symptoms;

C.U8. use the antigen-antibody reaction in current modifications and techniques of diagnosing contagious, allergenic, autoimmune, and neoplastic diseases, and well as blood diseases;

C.U9. produce preparations and recognise pathogens under the microscope;

C.U10. interpret the results of microbiological tests;

C.U11. link the images of tissue and organ damages to the clinical symptoms of the disease, the interview, and the results of laboratory tests;

C.U l 2. analyse the reactive, defensive, and adaptive phenomena, and disturbed regulation triggered by an etiological factor;

C.U13. do simple pharmacokinetic calculations;

C.U14. select medication in appropriate doses to correct pathological phenomena in the organism and individual organs;

C.U15. devise rational schedules of chemotherapy of infections, both empirical and targeted;

C.U16. write directions for all prescribed forms of medicinal substances;

C.U17. use pharmaceutical guides and medicinal product databases;

C.U18. estimate the toxicological risk for specific age groups and for hepatic and renal impairment conditions, and prevent drug poisoning;

C.U19. interpret the results of toxicological tests;

C.U20. describe the changes in the functioning of the organism in homeostatic distortions, particularly identify its integrated response to physical effort, exposure to high and low temperature, loss of blood or water, sudden verticalisation, and transition from sleep to wakefulness.

D. BEHAVIOURAL AND SOCIAL SCIENCES WITH ELEMENTS OF PROFESSIONALISM (including: sociology of medicine, medical psychology, medical ethics, history of medicine, elements of professionalism, the English language)

In terms of knowledge, the graduate knows and understands:

D.W1. the social dimension of health and illness, the impact of the social environment (family, network of social relationships), social inequalities, and social-cultural differences on health, and the role of social stress in health-conducive and self-destructive behaviours;

D.W2. the social factors affecting behaviour in health and illness, especially in chronic conditions;

D.W3. the forms of violence, models explaining violence in the family and in selected institutions, the social determinants of various forms of violence, and the role of the physician in recognising it;

D.W4. public attitudes towards the significance of health, illness, disability, and senility; the social consequences of illness and disability, the social and cultural barriers, and the health-determined concept of life quality;

D.W5. the principles and methods of communicating with the patient and his/her family, conducive to empathic, and trust-based relationship;

D.W6. the significance of verbal and non-verbal communication in the process of communicating with the patient, and the notion of trust in interaction with the patient;

D.W7. the psychological and social consequences of hospitalisation and chronic disease;

D.W8. the functioning of the health care system entities and the social role of the physician;

D.W9. the basic psychological mechanism of human functioning in health and illness;

D.W10. the role of the patient's family in the treatment process;

D.W11. the problems of the patient and his/her family's adaptation to illness perceived as a difficult situation, and to the related events, including death and the family mourning process;

D.W12. the role of stress in etiopathogenesis and course of diseases and the mechanisms of coping with stress;

D.W13. the mechanisms, objectives, and methods of treating addiction to psychoactive substances;

D.W14. the principles of health promotion, its objectives, and the main lines of action, with particular focus on familiarity with the role of the elements of a healthy lifestyle;

D.W15. the principles of motivating the patient to adopt health-conducive behaviour, and of informing him/her of an unfavourable prognosis;

D.W16. the main therms, theory, and ethical rules forming the general framework of proper interpretation and analysis of moral and medical issues;

D.W17. the patient's rights;

D.W18. the rules of teamwork;

D.W19. the cultural, ethnic, and national conditioning of human behaviour;

D.W20. the history of medicine, medicine of the primitive humans and the oldest civilisations, and the characteristic features of the Mediaeval medicine;

D.W21. the features of the modern medicine and its most vital discoveries;

D.W22. the emerging of new specialties in the scientific discipline of medical sciences, and the achievements of the top representatives of the Polish and world medicine;

D.W23. the foundations of evidence-based medicine.

In terms of skills, the graduate can:

D.U1. recognise the subjective needs and expectations of the patient in the therapeutic procedure, resulting from his/her social and cultural environment;

D.U2. notice signals of behaviour harmful to health and self-destructive, and react to it properly;

D.U3. choose the treatment which will minimise social consequences to the patient;

D.U4. build an atmosphere of trust over the whole diagnostic and therapeutic process;

D.U5. talk to the adult patient, the child, and the family employing the technique of active listening and expressing empathy, and discuss his/her life situation with the patient;

D.U6. inform the patient of the purpose, course, and potential risks inherent in the proposed diagnostic or therapeutic actions, and obtain his/her informed consent to such actions;

D.U7. engage the patient in the therapeutic process;

D.U8. communicate information on unfavourable prognosis to the patient and his/her family;

D.U9. advise on complying with the therapeutic recommendations and adopting a health-conducive life style;

D.U10. identify the violence risk factors, recognise violence, and react to it as appropriate;

D.U11. engage in psychological motivating and supporting interventions to the basic extent;

D.U12. communicate with the peer staff providing feedback and support;

D.U13. follow ethical standards in professional activities;

D.U14. recognise the ethical dimension of medical decisions, and differentiate between factual and regulatory aspects;

D.U15. respect the patient's rights;

D.U16. take responsibility for furthering own qualifications and sharing knowledge with others;

D.U17. critically analyse the medical literature, also in the English language, and draw conclusions;

D.U18. communicate with the patient in one of the foreign languages, level B2+ of the Common European Framework of Reference for Languages.

E. NON-SURGICAL CLINICAL SCIENCES (including: paediatrics, internal diseases, neurology, geriatrics, psychiatry, dermatology, oncology, family medicine, infectious diseases, rehabilitation, laboratory diagnostics, clinical pharmacology)

In terms of knowledge, the graduate knows and understands:

E.W1. environmental and epidemiological conditions of the most frequent diseases;

E.W2. rules of nutrition applicable to healthy and ill children, including natural feeding, preventive vaccinations, and the rules of the child's health evaluation;

EW3. the causes, symptoms, rules of diagnosing, and the therapeutic procedures in the most frequent paediatric health problems:

1) rickets, tetany, convulsions,

2) heart defects, myocarditis, endocarditis and pericarditis, cardiomyopathy, heart arrhythmia, cardiac insufficiency, hypertension, fainting,
3) acute and chronic diseases of the upper and lower respiratory tract, congenital defects of the respiratory tract, tuberculosis, cystic fibrosis, asthma, allergic rhinitis, nettle-rash, anaphylactic shock, angioedema,
4) anaemia, haemorrhagic diatheses, bone marrow failures, childhood malignancies, including solid tumours typical for childhood,
5) acute and chronic abdominal pains, vomiting, diarrheas, constipations, gastro-intestinal bleedings, ulcer, non-specific bowel diseases, pancreatitis, cholestasis and liver diseases, and other acquired illnesses and congenital defects of the digestive tract,
6) urinary tract infections, congenital defects of the urinary tract, nephrotic syndrome, kidney stones, acute and chronic kidney insufficiency, acute and chronic kidney inflammations, systemic kidney diseases, urination disorders, vesico-ureteral reflux disease,
7) growth disorders, thyroid and parathyroid diseases, adrenal diseases, diabetes, obesity, puberty and gonad function disorders,
8) infant cerebral palsy, encephalomyelitis and meningitis, epilepsy,
9) the most frequent children's infectious diseases,
10) genetic syndromes,
11) connective tissue diseases, rheumatoid fever, juvenile arthritis, systemic lupus erythematosus, dermatomyositis;

E.W4. the problems of a maltreated and sexually abused child, mental retardation and behavioural disorders - psychoses, addictions, eating and expelling disorders in children;

E.W5. the basic diagnostic and therapeutic methods with respect to the foetus;

E.W6. the most frequent life-threatening conditions in children and the rules of procedure in such conditions;

E.W7. the causes, symptoms, principles of diagnosing and treating the most frequently encountered internal diseases of adults and their complications:

1) cardiovascular diseases, including ischemic heart disease, heart defects, diseases of the endocardium, myocardium, and pericardium, heart insufficiency (acute and chronic), arterial and venous diseases, hypertension – primary and secondary, pulmonary hypertension,
2) respiratory diseases, including airways diseases, chronic obstructive pulmonary disease, bronchial asthma, bronchiectasis, cystic fibrosis, respiratory tract infections, interstitial respiratory diseases, pleural diseases, mediastinum diseases, obstructive sleep apnoea, respiratory distress (acute and chronic), bronchogenic carcinomas,
3) gastrointestinal diseases, including oral diseases, oesophageal diseases, stomach and duodenal diseases, intestinal diseases, pancreatic diseases, liver diseases, biliary tract and gallbladder diseases,
4) endocrine system diseases, including the hypothalamus and pituitary gland diseases, thyroid and parathyroid diseases, adrenal cortex and medulla diseases, ovary and testicle diseases and neuroendocrine tumours, polyglandular syndromes, diabetes of various types, and the metabolic syndrome – hypoglycaemia, obesity, dyslipidaemia,
5) kidney and urinary tract diseases, including acute and chronic kidney failures, glomerulus and interstitial kidney diseases, renal cysts, kidney stones, urinary tract infections, urinary tract carcinomas, especially of the urinary bladder and kidneys,
6) diseases of the haematopoietic system, including bone marrow aplasia, anaemia, granulocytopaenia and agranulocytosis, thrombocytopaenia, acute leukaemias, myeloproliferative and myeloproliferative-myelodysplastic neoplasms, myelodysplastic syndromes, neoplasms of mature lymphocytes B and T, haemorrhagic diatheses, thrombophilia, immediate life-threatening conditions in haematology, blood disorders in diseases of other organs,
7) rheumatic diseases, including systemic connective tissue diseases, systemic vasculitis, spondyloarthropathies, bone metabolic diseases, especially osteoporosis and osteoarthritis, gout,
8) allergic diseases, including anaphylaxis and anaphylactic shock, and angioedema,

9) water-and-electrolyte and acid-base disorders: dehydrations, excessive water retention, electrolyte management disorders, acidosis and alkalosis;

E.W8. the course and symptoms of the ageing process, and the principles of overall geriatric evaluation and interdisciplinary care over an elderly patient;

E.W9. the causes of and basic differences in the most frequently encountered diseases of elderly people, and the rules governing the procedures in basic geriatric syndromes;

E.W10. the basic rules of pharmacotherapy in diseases of the elderly;

E.W11. the risks accompanying hospitalisation of the elderly;

E.W12. the core principles of organising care over an elderly person, and the burden resting on the carer of an elderly;

E.W13. the basic constellations of neurological symptoms;

E.W14. the causes, symptoms, principles of diagnosing, and the therapeutic procedures in the most frequent nervous system diseases, including:

1) headaches: migraine, tension headache, headache syndromes, and trigeminal neuralgia,
2) vascular cerebral diseases, especially stroke,
3) epilepsy,
4) nervous system infections, in particular: meningitis, borreliosis, herpes virus encephalomyelitis, neurotransmission diseases,
5) dementias, particularly the Alzheimer disease, frontal lobe dementia, vascular dementia, and other dementia syndromes,
6) basal ganglia diseases, particularly the Parkinson disease,
7) dimyelinatic diseases, particularly multiple sclerosis,
8) diseases of the nervous-muscular system, particularly amyotrophic lateral sclerosis and sciatica,
9) skull and brain injuries, particularly brain concussion;

E.W15. the basic concepts of the pathogenesis of mental disorders;

E.W16. general symptomatology of mental disorders and the rules of their classification according to the main classification systems;

E.W17. the symptoms, principles of diagnosing and of taking the therapeutic approach to the most frequent mental disorders, including:

1) schizophrenia,
2) affective disorders,
3) neurotic and adaptive disorders,
4) eating disorders,
5) disorders connected with taking psychoactive substances,
6) sleep disorders;

E.W18. the diagnostic and procedural rules in emergency conditions in psychiatry, the suicide problem in particular;

E.W19. the specificity of mental disorders in children, adolescents, and elderly people, and of their treatment;

E.W20. the symptoms of mental disorders in the course of somatic illnesses; their impact on the course of the underlying disease and the prognosis, and the principles of treating them;

E.W21. the issues of human sexuality and the basic related disorders;

E.W22. the regulations governing mental health protection, especially the rules of admission to the psychiatric hospital;

E.W23. the environmental and epidemiological conditions of the most frequent neoplasms;

E.W24. the basics of early neoplasm discovery and the principles of screen tests in oncology;

E.W25. the options created by the modern tumour therapy, including multimodal therapy, the perspectives of cell and gene therapies and their undesirable side effects;

E.W26. the rules of combined therapies in oncology, the algorithms of diagnostic and therapeutic procedures in the most frequent neoplasms;

E.W27. the rules of diagnostics and therapeutic procedures in most frequently encountered problems of palliative medicine, including:

1) symptomatic treatment of the most frequent somatic symptoms,
2) the procedure in cancer cachexia and in preventing and treating bed sores,
3) the most frequently encountered emergencies in palliative medicine;

E.W28. the rules of palliative procedure with respect to the patient in terminal condition;

E.W29. the principles of treating pain, including neoplastic and chronic pain;

E.W30. the therms of disability and invalidity;

E.W31. the role of medical rehabilitation and the methods used therein;

E.W32. the basic aspects of prevention and the procedural principles in cases of vocational exposure to dangerous and harmful factors;

E.W33. the rules of the procedure to be followed in case an infectious disease is discovered;

E.W34. the causes, symptoms, rules of diagnostics, therapeutic and prevention procedures in most popular bacterial, viral, parasitic diseases and mycoses, including pneumococcal infections, hepatitis, acquired immune deficiency syndrome (AIDS), sepsis, and nosocomial infections;

E.W35. the basic features and environmental and epidemiological conditions of the most frequent skin diseases;

E.W36. the causes, symptoms, rules of diagnostics and therapeutic procedure to be followed in most frequently encountered sexually transmitted diseases;

E.W37. the causes, symptoms, rules of diagnostics and therapeutic procedure to be followed in most frequently encountered hereditary diseases;

E.W38. the causes, symptoms, rules of diagnostics and therapeutic procedure to be followed in diseases and specific problems most frequently encountered by a family physician;

E.W39. the types of biological materials used in laboratory diagnostics and the rules of sampling the materials for testing;

E.W40. the theoretical and practical foundations of laboratory diagnostics;

E.W41. the potential and limitations of laboratory tests in emergencies;

E.W42. the indications for monitored therapy;

E.W43. the basic pharmaco-economic therms.

In terms of skills, the graduate can:

E.U1. take medical interview with an adult patient;

E.U2. take medical interview with a child and its family;

E.U3. conduct complete and targeted physical examination of an adult patient;

E.U4. conduct physical examination of a child of any age;

E.U5. conduct psychiatric examination;

E.U6. conduct an indicative hearing test, field of vision test, and otoscopic examination;

E.U.7. evaluate the overall condition, state of consciousness, and awareness of the patient;

E.U8. assess the condition of a new-born baby in the Apgar scale, its maturity, and examine its reflexes;

E.U9. analyse the anthropometric measurements and blood pressure against the percentile norm data;

E.U10. assess advancement into sexual maturity;

E.U11. conduct check-up tests;

E.U12. conduct differential diagnostics of the most frequent diseases among adults and children;

E.U13. assess and describe the patient's somatic and mental condition;

E.U14. recognise immediately life-threatening conditions;

E.U15. recognise the condition of intoxication with alcohol, narcotic drugs, and other drugs;

E.U16. plan diagnostic, therapeutic, and prophylactic procedures;

E.U17. analyse the potential undesirable side effects of individual medicinal substances and interactions between them;

E.U18. propose individualisation of the binding therapeutic guidelines and other treatment methods in view of ineffectiveness of the standard therapy or its contraindications;

E.U19. recognise symptoms of addiction to medicinal drugs and propose a therapeutic procedure;

E.U20. qualify the patient for home treatment and hospitalisation;

E.U21. recognise conditions where the duration of survival, functional condition, or preferences of the patient limit adherence to the guidelines laid down for the specific disease;

E.U22. assess a disabled patient in terms of his/her functioning;

E.U23. propose the rehabilitation programme in most frequent diseases;

E.U24. interpret the results of laboratory tests and identify the causes of deviations from the norm;

E.U25. apply nutritional treatment, including enteral and parenteral feeding;

E.U26. plan the procedure in case of exposition to blood transmitted infections;

E.U27. qualify the patient for vaccinations;

E.U28. sample and secure the materials for laboratory diagnostic tests;

E.U29. perform the basic medical procedures and therapies, including:

1) taking the body temperature (both external and internal), the heart rate, the arterial pressure applying a non-invasive method,
2) monitoring the vital signs with the use of the patient monitor, pulse oximetry,
3) conducting spirometry tests, oxygentherapy, assisted and controlled ventilation,
4) inserting the oropharyngeal tube,
5) performing intravenous, intramuscular, and subcutaneous injections, cannulating peripheral veins, sampling peripheral venous blood, sampling blood for culture, sampling arterial blood, sampling arterialised capillary blood,
6) taking swabs from the nose, throat, and skin,
7) catheterising the urinary bladder in women and men, inserting the gastric tube, performing gastric lavage, enema,
8) taking standard electrocardiogram tests and interpreting them, performing electrical cardioversion and defibrillation,
9) taking simple strip tests and measuring glucose concentration in blood;

E.U30. assist in the following medical procedures and operations:

l) transfusing blood and blood product preparations,
2) performing pleural drainage,
3) performing pericardiocentesis,
4) performing paracentesis,
5) performing lumbar puncture,
6) performing thin needle biopsy,
7) performing epicutaneous tests,
8) performing intradermal and scarification tests and interpreting their results;

E.U3l. interpret pharmaceutical characteristics of medicinal products and evaluate drug advertising materials critically;

E.U32. plan specialist consultations;

E.U33. implement the basic therapeutic procedure in acute poisoning;

E.U34. monitor the condition of the patient poisoned with chemical substances or medications;

E.U35. assess bed sores and apply proper dressing;

E.U36. deal with injuries (apply the dressing or immobilisation, dress and stitch the wound);

E.U37. recognise the patient in agony and confirm his/her death;

E.U38. keep the patient's medical records.

F. SURGICAL CLINICAL SCIENCES (including: anaesthesiology and intensive care, general surgery, orthopaedics and traumatology, emergency medicine, oncological surgery, gynaecology and obstetrics, urology, otorhinolaryngology, ophthalmology, neurosurgery, transplantology, diagnostic imaging)

In terms of knowledge, the graduate knows and understands:

F.W1. the causes, symptoms, principles of diagnosing and applying therapeutic procedures in most frequent diseases requiring surgical intervention, the uniqueness of infancy taken into account, in particular:

1) acute and chronic abdominal diseases,
2) chest diseases,
3) limb and head diseases,
4) bone fractures and organ injuries;

F.W2. selected issues of paediatric surgery, including traumatology and otorhinolaryngology, and the acquired defects and diseases indicating the need of surgical treatment in children;

F.W3. the rules of qualifying for basic surgical operations and invasive diagnostic and treatment procedures, the principles of performing them and their most frequent complications;

F.W4. the rules of perioperative safety, patient preparation for the surgery, performance of general and local anaesthesia and controlled sedation;

F.W5. post-operative treatment with pain therapy and post-operative monitoring;

F.W6. indications for and the principles of implementing intensive care;

F.W7. the guidelines to cardiopulmonary resuscitation in new-born babies, children and adults;

F.W8. the operating principles of the integrated State Emergency Medical System;

F.W9. the reproductive functions of women, the related disorders, and the diagnostic and therapeutic procedures, especially with respect to:

1) the menstrual cycle and its disorders,
2) pregnancy,
3) physiological and pathological labour and puerperium,
4) inflammations and tumours of the sex organs,

5) birth control,

6) menopause,

7) basic methods of gynaecological diagnostics and surgeries;

F.W10. the issues of the contemporarily employed imaging tests, especially:

1) radiological symptomatology of the basic diseases,

2) the instrumental methods and imaging techniques used in medical surgeries,

3) the indications, contraindications, and patient preparation for individual types of imaging tests, and contraindications against the use of contrast agents;

F.W11. the issues in the area of sight organ diseases, in particular:

1) the causes, symptoms, the diagnostic and therapeutic principles in most frequent ophthalmological diseases,

2) ophthalmological complications of systemic illnesses together with their ophthalmological symptomatology, and the correct procedures in such cases,

3) surgical intervention in individual eye diseases,

4) the basic groups of medicinal drugs used in ophthalmology, their undesirable side effects and interactions,

5) the groups of commonly used medicinal drugs carrying ophthalmological complications, their contraindications and mechanisms;

F.W12. issues in the area of laryngology, phoniatrics and audiology, including:

l) the causes, clinical course of, treatment methods, complications, and prognoses in ear, nose, paranasal sinus, mouth, throat, and larynx illnesses,

2) diseases of the facial nerve and selected neck structures,

3) the rules of diagnostic and therapeutic procedures in mechanical injuries of the ear, nose, larynx, and oesophagus,

4) the procedures in otolaryngological emergencies, especially laryngeal dyspnoea,

5) the rules of diagnostic and therapeutic procedures in hearing, voice, and speech disorders,

6) the rules of diagnostic and therapeutic procedures in head and neck tumours;

F.W13. the causes, symptoms, rules of diagnostics and therapeutic procedures in most frequent central nervous system diseases with respect to:

1) cerebral oedema, its consequences, especially in emergencies,
2) other forms of intracranial tightness and their consequences,
3) skull and brain injuries,
4) vascular defects of the central nervous system,
5) tumours of the central nervous system,
6) spine and spinal cord diseases;

F.W14. the basics of the issues of surgical transplantology, indications for transplantation of irreversibly damaged organs and tissues, and the related procedures;

F.W15. the principles of suspecting and recognising brain death;

F.W16. the algorithm of proceeding in individual stages of accidental and posttraumatic hypothermia.

In terms of skills, the graduate can:

F.Ul. assist in typical surgical procedures, prepare the operative field, and apply local anaesthesia of the surgical field;

F.U2. use basic surgical instruments;

F.U3. apply the rules of asepsis and antiseptics;

F.U4. dress a simple wound, apply and change sterilised surgical dressing;

F.U5. insert the peripheral catheter;

F.U6. examine the nipples, lymph nodes, the thyroid gland, and the abdomen for acute abdomen and conduct finger examination through the rectum;

F.U7. assess the results of radiological tests for the most frequent types of fractures, especially long bone fractures;

F.U8. immobilise a limb temporarily, select the type of immobiliser necessary in typical clinical situations, and control the correct blood flow in the limb once the immobilising dressing has been applied;

F.U9. stop external bleedings;

F.U10. perform basic resuscitation procedures using an automated external defibrillator, and other rescue operations, and provide first aid;

F.U11. act in accordance with the algorithm of advanced resuscitation procedures;

F.U12. monitor the patient in the post-operative period based on core vital parameters;

F.U13. recognise signs and symptoms testifying to irregular course of pregnancy (irregular bleedings, uterine contractions);

F.U14. interpret the findings of physical examination of a pregnant woman (arterial pressure, heart rate of the mother and foetus), and the results of laboratory tests testifying to pathological pregnancies;

F.U15. interpret the cardiotocogram (CTG);

F.U16. recognise the onset of labour and its irregular duration;

F.U17. interpret signs and symptoms in puerperium;

F.U18. formulate recommendations, indications and contraindications with respect to contraceptive methods and their application;

F.U19. perform ophthalmological screen tests;

F.U20. recognise ophthalmological conditions which require instant specialist attention, and provide preliminary, qualified aid in physical and chemical injuries of the eye;

F.U21. assess the condition of an unconscious patient in accordance with international point scales;

F.U22. recognise symptoms of growing intracranial pressure;

F.U23. assess the indications for suprapubic puncture and participate in performing it;

F.U24. assist in typical urological procedures (diagnostic and therapeutic endoscopy of the urinary tract, lithotripsy, prostate puncture);

F.U25. conduct basic laryngological examinations of the ear, nose, throat, and larynx;

F.U26. conduct an indicative hearing test.

G. LEGAL AND ORGANISATIONAL ASPECTS OF MEDICINE (including: hygiene, epidemiology, public health, medical law, forensic medicine)

In terms of knowledge, the graduate knows and understands:

G.Wl. the methods of evaluating health of an individual human being and the population, various classification systems of diseases and medical procedures;

G.W2. the methods of identifying and testing risk factors, the disadvantages and advantages of various types of epidemiological studies, and the measures indicating the existence of a cause and effect relationship;

G.W3. epidemiology of contagious and chronic diseases, the methods of preventing them at different stages in the natural history of the disease, and the role of epidemiological supervision;

G.W4. the notion of public health, its goals, objectives, and the structure and organisation of the health care system at the national and global levels, and the impact of economic conditions on health protection possibilities;

G.W5. the legal regulations governing health care services, the patient's rights, the labour law, the basis of practising medical profession, and the functioning of the physicians' self-governing bodies;

G.W6. the core legal regulations governing organisation and financing of the health protection system, the public health insurance system, and the organisation rules applicable to health care entities;

G.W7. the physician's legal obligations with respect to declaring death;

G.W8. the legal regulations applicable to and the basic methods of medical experiments and other medical studies, including the fundamental data analysis methods;

G.W9. the legal regulations applicable to transplantations, artificial procreation, abortion, aesthetic surgery, palliative therapy, mental diseases;

G.W10. the basic regulations of the pharmaceutical law;

G.W11. the legal regulations governing medical secrecy, keeping medical documentation, criminal, civil, and professional liability of a physician;

G.W12. the notion of violent death and sudden death, and the differences between injury and damage;

G.W13. the legal foundations and the rules of behaviour of the physician when inspecting the corpse on the site of its discovery, and during forensic autopsy;

G.W14. the rules of forensic diagnostics and issuing opinions in cases concerning infanticide and reconstruction of the circumstances of a traffic accident;

G.W15. the rules of producing expert opinions for courts in criminal matters;

G.W16. the rules of issuing expert medical opinions on capability to participate in the procedural actions, the biological effect, and health damage;

G.W17. the notion of a medical error, the most common causes of medical errors, and the rules of issuing opinions in such cases;

G.W18. the rules of sampling materials for toxicological and haemo-genetic tests.

In terms of skills, the graduate can:

G.Ul. describe the demographic structure of the population and evaluate health problems in the population based thereon;

G.U2. accumulate information on the presence of infectious and chronic disease risk factors, and plan preventive actions at different prevention levels;

G.U3. interpret the measures of frequency of diseases and disabilities;

G.U4. assess the epidemiological situation with respect to the diseases common in the Republic of Poland and in the world;

G.U5. explain the basic rights to the individuals using medical services, and the legal basis for providing the services;

G.U6. draw medical certificates intended for the patient, his/her family, and other persons;

G.U7. recognise behaviours and signals indicating possible violent abuse of a child while examining it;

G.U8. act in a way enabling avoidance of medical errors;

G.U9. sample blood for toxicological tests and secure the material for haemo-genetic tests.

IV. METHOD OF VERIFYING THE ATTAINED LEARNING OUTCOMES

1. Verification of the attained learning outcomes requires application of varied forms of testing, adequate for the category of knowledge, skills, and social competencies the outcomes relate to.

2. The attained learning outcomes in the category of knowledge can be verified through written or oral examinations.

3. Written examinations can be conducted in the forms of essays, reports, brief structured questions, multiple choice questions (MCQs), multiple response questions (MRQs), yes/no tests, or

answer matching tests.

4. Examinations should be standardised and oriented on checking knowledge at a level above the mere familiarity with the issues (the level of comprehending the issues, the skill of analysing and synthesising information, and problem solving).

5. Verification of the attained learning outcomes in the category of skills with respect to communication and procedures (manual skills) requires direct observation of the student demonstrating the skill during a traditional clinical examination or a standardised examination *(Objective Structured Clinical Examination*, OSCE) and its modifications *(Mini-Cex).* The OSCE examination is especially recommendable as the form of checking all clinical skills acquired during the practical clinical courses of year VI of studies.