2. SPECIFIC LEARNING OUTCOMES

A. MORPHOLOGICAL SCIENCES

In terms of knowledge the graduate knows and understands:

A.W1. the structures of the human body: cells, tissues, organs and systems, with a particular emphasis on the stomatognathic system;

A.W2. the development of organs and of the whole body, with a particular emphasis on the masticatory organ;

A.W3. the structure of the human body in a topographical and functional approach; A.W4. the role of the nervous system in the functioning of individual organs;

A.W5. the functional significance of individual organs and of the systems formed by these organs; A.W6. the anatomical rationale for a physical examination.

In terms of skills the graduate is able to:

A.U1. interpret anatomical relationships illustrated via basic examination methods from the field of diagnostic radiology (plain and contrast-enhanced images);

A.U2. operate a microscope, including the use of immersion, and recognise the histological structure of organs and tissues under a microscope, as well as describe and interpret the microscopic structure of cells, tissues and organs and their functions.

B. SCIENTIFIC BASES OF MEDICINE

In terms of knowledge the graduate knows and understands:

B.W1. the role of major and trace elements in processes occurring in the body, including supply, absorption and transport;

B.W2. the role of electrolytes, buffer systems and chemical reactions in biological systems;

B.W3. the biochemical bases of integrity of the human body;

B.W4. the structure and functions of important chemical compounds found in the human body, especially the properties, functions, metabolism and reaction enthalpy of proteins, nucleic acids, carbohydrates, lipids, enzymes and hormones;

B.W5. the principles of calcium and phosphate metabolism;

B.W6. the role and significance of body fluids, including saliva;

B.W7. the principles of statics and biomechanics in relation to the human body; B.W8. the mechanics of the masticatory organ;

B.W9. the methods of imaging of tissues and organs and the principlesof operation of diagnostic equipment used for this purpose;

B.W10. the principles of operation of ultrasound devices;

B.W11. the principles of photometry and fibre optics and the use of light sources in dentistry;

B.W12. the principles of operation of lasers in dentistry;

B.W13. the principles of operation of dental equipment;

B.W14. basic concepts from the fields of biology and ecology;

B.W15. the relationships between organisms in an ecosystem;

B.W16. the parasite–host interactions;

B.W17. selected topics from the fields of genetics and molecular biology;

B.W18. the clinical application of the principles of genetics;

B.W19. human vital functions;

B.W20. the neurohormonal regulation of physiological processes;

B.W21. the principles of acid-base homeostasis as well as oxygen and carbon dioxide transport within the body;

B.W22. the principles of metabolism and nutrition;

B.W23. The numerical value of basic physiological variables and changes in numerical values.

In terms of skills the graduate is able to:

B.U1. relate chemical phenomena to processes occurring in the oral cavity;

B.U2. interpret the physical phenomena occurring in the masticatory organ;

B.U3. use physical processes specific to the dental profession;

B.U4. use biological and ecological concepts in the human–living environment context;

B.U5. apply knowledge from the fields of genetics and molecular biology in clinical work.

C. PRECLINICAL SCIENCES

In terms of knowledge the graduate knows and understands:

C.W1. types, species and structures of viruses, bacteria, fungi and parasites, their biological characteristics and mechanisms of pathogenicity;

C.W2. the physiological bacterial flora in the human body;

C.W3. the basics of epidemiology of viral and bacterial infections, fungal and parasitic infections and the routes through which they spread in the human body;

C.W4. the species of bacteria, viruses and fungi which are the most common aetiological agents of contagions and infections;

C.W5. the basics of disinfection, sterilisation and aseptic techniques;

C.W6. external and internal pathogens;

C.W7. the structure of the immune system and its role;

C.W8. the hormonal and cellular mechanisms of innate and acquired immunity and the mechanisms of hypersensitivity reactions and autoimmune processes;

C.W9. the phenomenon of emergence of drug resistance;

C.W10. the basics of immunodiagnostics and immunomodulation;

C.W11. the pathomechanism of allergic diseases, selected hypersensitivity diseases, autoimmune diseases and immunodeficiencies;

C.W12. the concepts of homeostasis, adaptation, resistance, immunity, predisposition, susceptibility, compensatory mechanisms, feedback and the "vicious circle" mechanism;

C.W13. the concept of health and disease, the mechanisms of onset and progression of a disease process at the molecular, cellular, tissue and systemic levels, the clinical symptoms of a disease, prognosis and complications of a disease;

C.W14. the mechanisms of inflammatory reaction and wound healing;

C.W15. the basic disorders of hormone secretion, water and electrolyte metabolism, acid–base homeostasis, renal and pulmonary function and the mechanisms of onset and consequences of cardiovascular disorders, including shock;

C.W16. the diagnostic methods used in anatomical pathology and the role of laboratory testing in prevention and diagnosis of organ and systemic disorders;

C.W17. the signs of death and postmortem changes as well as principles of technique and diagnosis in autopsies;

C.W18. the mechanisms of action of drugs as well as pharmacokinetics and biotransformation of individual drug groups;

C.W19. indications and contraindications for drugs, their dosage, adverse and toxic effects and interactions between drugs;

C.W20. the principles of treatment of viral, bacterial, fungal and parasitic infections;

C.W21. the principles of pain and anxiety prevention and management as well as pharmacology of drugs used in life-threatening situations;

C.W22. the principles of writing down selected forms of ready-to-use and compounded drugs on a prescription;

C.W23. the equipment of a dentist's office and the instruments used in dental procedures;

C.W24. the definition and classification of dental materials and consumables;

C.W25. the composition, structure, bonding, properties, purpose and use of dental materials;

C.W26. surface properties of dental hard tissues and dental biomaterials;

C.W27. the phenomenon of adhesion and the mechanisms of producing an adhesive bond as well as procedures for adhesive surface preparation of tooth enamel, dentine and dental biomaterials;

C.W28. the basic clinical procedures for dental hard tissue reconstruction and endodontic treatment as well as methods and technical and laboratory procedures for application of dental prostheses;

C.W29. the mechanisms of degradation (corrosion) of dental biomaterials in the oral cavity and their effects on biological properties of these materials;

C.W30. the mechanisms which lead to organ and systemic pathologies, including infectious, invasive, autoimmune, immunodeficiency, metabolic and genetic diseases;

C.W31. the effects of physical, chemical and biological factors as well as avitaminosis and stress on the patient's body;

C.W32. the basic clinical procedures for periodontal prophylaxis;

C.W33. the basic clinical procedures for orthodontic prophylaxis.

In terms of skills the graduate is able to:

C.U1. collect an appropriately selected type of biological material for microbiological testing depending on the location and course of infection;

C.U2. interpret results of microbiological tests, antibody tests and antibiograms;

C.U3. select and perform tests which indicate the number of bacteria in body fluids;

C.U4. predict and explain complex pathomechanisms of disorders that lead to the onset of diseases;

C.U5. analyse the clinical course of diseases in pathological processes;

C.U6. identify pathological changes in cells, tissues and organs in terms of circulatory disorders, regressive changes, progressive changes and inflammation;

C.U7. identify pathological changes caused by HIV infection and observed in patients with acquired immunodeficiency syndrome (AIDS);

C.U8. select drugs in appropriate doses and prescribe medications as indicated;

C.U9. perform endodontic treatment and reconstruct the missing mineralised tissue in a phantom tooth;

C.U10. use adhesive techniques;

C.U11. select reconstructive, prosthetic and bonding biomaterials based on their properties and clinical conditions;

C.U12. recreate anatomical occlusal conditions and perform occlusion analysis;

C.U13. design dental prostheses in accordance with the principles of their preparation in a laboratory;

C.U14. identify pathological changes in cells, tissues and organs according to basic mechanisms;

C.U15. plan the basic steps of preventive care for patients in terms of periodontal needs;

C.U16. plan the basic steps of preventive care for patients in terms of orthodontic needs.

D. BEHAVIOURAL SCIENCES

In terms of knowledge the graduate knows and understands:

D.W1. the current views on the social dimension of health and illness, the impact of the social environment (family, networks of social relations) and social inequalities as well as socio-cultural differences on health, and the role of social stress in health-related and self-destructive behaviours;

D.W2. the forms of violence, models explaining violence in the family and violence in selected institutions, the social determinants of various forms of violence and the role of the physician and the dentist in recognising it;

D.W3. the social attitudes to the meaning of health, illness, disability and old age, the social consequences of illness and disability and socio-cultural barriers, as well as the concept of health-related quality of life;

D.W4. the importance of verbal and non-verbal communication in communication with the patient and the concept of trust in interaction with the patient;

D.W5. the functioning of health system entities and the social role of the physician and the dentist;

D.W6. the basic psychological mechanisms of human functioning in health and in sickness;

D.W7. the patterns of human psychological development and the role of the patient's family in the treatment process;

D.W8. the issue of the adaptation of the patient and his/her family to the illness as a difficult situation and to related events, including dying and the process of family grieving;

D.W9. stress coping mechanisms and the role of stress in the aetiopathogenesis and course of diseases;

D.W10. the mechanisms of addiction to psychoactive substances and the goals and options for treatment;

D.W11. the principles of motivating the patient towards healthy behaviour and informing about an unfavourable prognosis;

D.W12. the principles of altruism and clinical responsibility; D.W13. the principles of functioning of a therapeutic team;

D.W14. the imperative and standard behaviour for physicians and dentists established by the professional self-governing organisation of physicians and dentists;

D.W15. the patient's rights;

D.W16. the history of medicine, with a particular emphasis on the history of dentistry;

D.W17. the process of formation of new specialties within the scope of scientific discipline – medical sciences and achievements of leading representatives of Polish and world medicine.

In terms of skills the graduate is able to:

D.U1. take into consideration, in the therapeutic process, the subjective needs and expectations of the patient resulting from socio-cultural conditions;

D.U2. recognise and respond to signs of anti-health and self-destructive behaviours; D.U3. choose treatment that minimises the social consequences for the patient; D.U4. build an atmosphere of trust throughout the diagnostic and treatment process;

D.U5. undertake actions to improve the quality of life of patients and prevent its deterioration in the future;

D.U6. interview an adult patient, a child and a family using active listening techniques and expressing empathy;

D.U7. identify risk factors for violence, recognise violence and respond appropriately;

D.U8. apply basic psychological motivational and supportive interventions;

D.U9. recognise signs of medical actions being undertaken without the patient's consent or with coercion towards the patient and employ measures provided for in generally applicable provisions of law;

D.U10. work in a multidisciplinary team, in a multicultural and multinational environment;

D.U11. respect ethical standards in professional activities; D.U12. respect the rights of the patient;

D.U13. use and process information via IT tools and employing modern sources of medical knowledge;

D.U14. plan the work of a dentist's team and the equipment for the dentist's office in accordance with the principles of ergonomics and occupational safety;

D.U15. communicate with the patient in one of the foreign languages at B2+ level of the Common European Framework of Reference for Languages;

D.U16. critically analyse medical literature, including literature written in English, and draw conclusions.

E. GENERAL CLINICAL SCIENCES (NON-INTERVENTIONAL)

In terms of knowledge the graduate knows and understands:

E.W1. the relationship between morphological abnormalities and the function of changed organs and systems and between clinical symptoms and diagnostic and treatment options;

E.W2. the basic methods for conducting a medical examination and the role of additional tests in diagnosis, monitoring, prognosis and prevention of organ and systemic disorders, with a particular emphasis on their effects on oral tissues;

E.W3. the aetiopathogenesis and symptomatology of diseases of the respiratory, circulatory, haematopoietic, genitourinary, immune, gastrointestinal, musculoskeletal and endocrine systems, with a particular emphasis on diseases manifesting in the oral cavity;

E.W4. the principles for dealing with victims suffering from multiple organ injuries;

E.W5. the principles of organisation of rescue operations in disasters and accidents, the phases of rescue operations and the scope of provision of aid to the victims;

E.W6. the neurological effects of chronic drug use;

E.W7. the symptoms of acute abdominal diseases, poisoning, infection and sepsis;

E.W8. the symptoms of hepatitis, HIV infection and acquired immunodeficiency syndrome (AIDS) in infectious and parasitic diseases;

E.W9. the principles of immunisation against infectious diseases in children and adults;

E.W10. the hormonal conditions of the female body in different periods of life; E.W11. the effects of nutrition and addictions in pregnant women on fetal development;

E.W12. the principles of dental care for pregnant women; E.W13.

the principles of diagnosis of eye diseases, including eye injuries;

E.W14. the role of focal infections in ocular diseases;

E.W15. cytodiagnostic methods and criteria for diagnosing and differentiating neoplastic and non-neoplastic diseases;

E.W16. immunological aspects of transplantation and haemotherapy;

E.W17. the causes and mechanisms of circulatory and respiratory arrest and the principles of resuscitation and post-resuscitation management;

E.W18. life-threatening situations;

E.W19. the methods used in medical rehabilitation, its goals and planning methodology;

E.W20. the cases where the patient should be referred to a hospital;

In terms of skills the graduate is able to:

E.U1. perform differential diagnosis of the most common diseases;

E.U2. assess and describe the somatic and psychological state of the patient;

E.U3. plan diagnosis and therapy for the most common diseases;

E.U4. interpret laboratory test results;

E.U5. identify correct and pathological structures and organs in additional imaging examinations (X-ray, ultrasound, computed tomography [CT]);

E.U6. plan the management in the event of exposure to a blood-borne infection;

E.U7. qualify patients for vaccination; E.U8. recognise life-threatening risks;

E.U9. describe and recognise symptoms of shock and acute circulatory failure;

E.U10. recognise symptoms of brain injury and cerebrovascular diseases, dementia and disorders of consciousness;

E.U11. diagnose head and facial pain and neurological diseases of adults and children which pose problems in dental practice;

E.U12. recognise diseases of the nasopharyngeal cavity, their aetiology and pathomechanism;

E.U13. make a preliminary diagnosis of cancerous lesions of the nose, pharynx and larynx;

E.U14. diagnose and treat skin diseases: infectious, allergic and sexually transmitted;

E.U15. recognise skin cancers and precancerous conditions;

E.U16. recognise dermatoses and collagenoses manifesting in the oral mucosa;

E.U17. recognise diseases related to nicotine dependence, alcoholism and other addictions;

E.U18. diagnose diseases which involve enlargement of the lymph nodes in the neck and the submandibular region and infectious diseases, with a particular emphasis on lesions within the oral cavity;

E.U19. discuss and diagnose selected diseases of the optical and protective systems of the eye;

E.U20. perform basic medical procedures: temperature measurement, pulse measurement, noninvasive blood pressure measurement, oxygen therapy, assisted

and artificial respiration, oropharyngeal tube insertion, preparation of the surgical field, hygienic and surgical hand disinfection, intravenous, intramuscular and subcutaneous injections, collection of peripheral venous blood, collection of nasal, throat and skin swabs, simple strip tests, blood glucose measurement.

F. SPECIALISED CLINICAL SCIENCES (INTERVENTIONAL)

In terms of knowledge the graduate knows and understands:

F.W1. normal occlusion at each stage of human development and deviations from it;

F.W2. rules of conduct for preventive and curative treatment in diseases of the masticatory organ at different stages of development;

F.W3. the viral, bacterial and fungal flora of the oral cavity and its importance;

F.W4. symptoms, course and management of specific oral, head and neck diseases, taking into account patient age groups;

F.W5. principles of handling pulp and mineralised tooth tissue diseases, as well as trauma to the teeth and facial bones;

F.W6. principles of handling periapical tissue diseases;

F.W7. dental cavity morphology and principles of endodontic treatment, as well as instrumentation used in such treatment;

F.W8. principles of handling cysts, precancerous conditions, and head and neck cancers;

F.W9. periodontal tissue and oral cavity mucosa diagnosis and treatment methods;

F.W10. indications and contraindications for treatment with the use of dental implants;

F.W11. indications and contraindications for cosmetic dentistry procedures;

F.W12. causes of complications of stomatognathic system diseases and the principles of handling such complications;

F.W13. fundamentals of antibiotic therapy and antimicrobial resistance;

F.W14. masticatory organ rehabilitation methods;

F.W15. therapeutic methods of reducing and enduring pain and reducing anxiety and stress;

F.W16. the principles of anaesthesia in dentistry procedures and the basic pharmaceuticals;

F.W17. the principles of construction and operation of removable and fixed orthodontic appliances;

F.W18. principles of radiological diagnosis;

F.W19. the pathomechanism of the impact of oral diseases on the overall health;

F.W20. the pathomechanism of the effects of general diseases or applied therapies on the oral cavity;

F.W21. oral cavity disease prevention;

F.W22. principles of handling diseases of the masticatory organ tissues, as well as injuries to teeth and jawbones;

F.W23. the specificity of dental care in patients suffering from general diseases and the principles of cooperation with the physician in charge of the underlying disease.

In terms of skills the graduate is able to:

F.U1. take medical history from the patient or his/her family; F.U2. perform a physical examination of the patient;

F.U3. explain to the patient the nature of their health issues, determine a method of treatment that is confirmed by the patient's informed consent and make a prognosis;

F.U4. inform the patient and his/her family of a poor prognosis; F.U5. collect and secure the material for diagnostic tests, including cytological tests; F.U6. interpret the results of additional examinations and consultations;

F.U7. determine indications and contraindications for performing specific dental procedures;

F.U8. provide treatment for acute and chronic, odontogenic and non-odontogenic inflammatory processes of the oral cavity soft tissues, periodontium, and jawbone;

F.U9. handle local and systemic complications that may occur during and after dental procedures;

F.U10. prescribe medicines, taking into account their interaction and side effects;

F.U11. handle the patient's current medical record, write referrals for tests or specialist dental or general medical treatment;

F.U12. formulate research problems related to dentistry;

F.U13. present selected medical issues in spoken or written form, in a manner adequate to the level of his/her audience

F.U14. assess the risk of caries using bacteriological tests and saliva testing; F.U15. plan treatment of diseases of the stomatognathic system tissues;

F.U16. apply appropriate medicines during and after a dental procedure to relieve pain and anxiety;

F.U17. diagnose and treat periodontal diseases to a basic extent; F.U18.
diagnose, differentiate, and classify malocclusions;
F.U19 provide first aid in case of damage to an orthodontic appliance; F.U20.
create simple orthodontic appliances;
F.U21. perform treatment to prevent malocclusions at the deciduous teeth and the mixed dentition stage;
F.U22. perform clinical and laboratory procedures required for prosthetic rehabilitation in simple cases;
F.U23. describe tooth x-rays and panoramic radiographic images.

G. LEGAL AND ORGANISATIONAL BASIS OF MEDICINE

In terms of knowledge the graduate knows and understands:
G.W1. the concept of public health and the goals, tasks, and structure of the public health system;
G.W2. health promotion models and concepts;
G.W3. basic concepts of prevention, health promotion, and environmental hygiene;
G.W4. basic concepts related to health, lifestyle, and population health status;
G.W5. methods for determining the health needs of the population;
G.W6. the health situation in the Republic of Poland and worldwide;
G.W7. health and social policy strategy of both the Republic of Poland and the European Union;
G.W8. . Organisational and legal aspects of the functioning of the Polish health care system;
G.W9. medical entity management principles;
G.W10. principles of operation, management and computerisation of medical entities and other public health care institutions;
G.W11. primary health care functioning principles;
G.W12. principles of negotiating and concluding contracts for the provision of health services in the public and non-public sectors;
G.W13. the aetiology of occupational diseases, as defined by law, including those associated with practising dentistry;

G.W14. population health status indicators and the principles of their assessment; G.W15. disease prevention and health improvement principles;

G.W16. principles of infectious disease outbreak investigation; G.W17. prevention activity planning and assessment principles;

G.W18. the principles of ergonomic work organisation in dentist's offices and performing dental procedures;

G.W19. the rules of health and safety in dentistry;

G.W20. principles of conduct in epidemiological emergencies; G.W21. sources of stress and options for eliminating them;

G.W22. the principles of professional liability of dentists (moral, ethical, legal, financial and professional), as well as the dentist's duties towards their patient;

G.W23. the issue of medical malpractice: diagnostic, technical, therapeutic and organisational;

G.W24. rules concerning the liability for violating the principles of the dentistry profession;

G.W25. legal basis of communication in medicine; G.W26. patient's rights;

G.W27. principles of medical ethics and deontology, ethical problems of contemporary medicine resulting from the dynamic development of science and biomedical technologies, as well as ethical conduct principles for dentists;

G.W28. legal basis for the functioning of the medical profession and the professional self-governing organisation of physicians and dentists in the Republic of Poland;

G.W29. laws on conducting health care activities; G.W30. basic duties of the employer and employee;

G.W31. principles of providing benefits in case of illness, workplace accidents, and occupational diseases, as well as maternity benefits;

G.W32. principles of issuing certificates on temporary inability to work, incapacity benefits, and disability certificates;

G.W33. rules for handling corpses;

G.W34. rules for managing, storing and sharing medical records as well as the rules of personal data protection;

G.W35. issues concerning serology and forensic genetics; G.W36. basics of forensic toxicology;

G.W37. the rules on the preparation of expert opinions in criminal matters;

G.W38. judicial aspects of human ethology.

In terms of skills the graduate is able to:

G.U1. analyse population health data and epidemiological data and determine the health status of a population on their basis;

G.U2. describe selected health phenomena on a population scale and predict their impact on the functioning of the health care system;

G.U3. assess the magnitude of health problems and identify health priorities and determine their importance in health policy;

G.U4. analyse the determinants of the epidemiological situation in terms of social and demographic processes;

G.U5. create simple prevention and treatment research programs; G.U6. identify factors that influence the national health policy;

G.U7. plan prevention and health promotion activities and implement population health promotion activities;

G.U8. analyse different health services financing systems in the Republic of Poland and other countries;

G.U9. prepare competitive offers related to the provision of health services; G.U10. set up and operate a dentist's office;

G.U11. work as part of a team and lead a team at a dentist's office;

G.U12. recognise harmful and onerous factors at the workplace or the place of residence or study;

G.U13. assess the level of the health risk posed by air, water, soil, and food quality;

G.U14. confirm or rule out the connection of environmental factors to disease aetiology – including in occupational diseases;

G.U15. provide the patient with the necessary information regarding oral health promotion;

G.U16. provide the patient with information on risk factors and the methods of preventing the most prevalent social diseases in the Republic of Poland;

G.U17. interpret basic epidemiological indicators, define and evaluate the reliability and accuracy of tests used in screening;

G.U18. design epidemiological studies; G.U19. conduct an epidemiological investigation;

G.U20. work in line with the ergonomic work organisation principles;

G.U21. apply the sanitary and epidemiological regulations, as well as workplace health and safety regulations;

G.U22. operate under conditions of stress and uncertainty;

G.U23. indicate differences and similarities between ethical and legal standards; G.U24. apply legal provisions on practising the dentistry profession;

G.U25. explain and apply standards included in the Medical Code of Ethics and international medical ethics standards;

G.U26. maintain medical records; G.U27. issue medical certificates; G.U28. evaluate postmortem changes;

G.U29. perform a postmortem identification based on a dental examination;

G.U30. evaluate the effects of injuries to the face and skull and classify them in criminal and civil proceedings.