

EDUCATION PROGRAM AT THE DOCTORAL SCHOOL OF JAN KOCHANOWSKI UNIVERSITY IN KIELCE

The program has been in force since the academic year of 2019/2020.

1. The education program at the Doctoral School of Jan Kochanowski University in Kielce is implemented within four field sections within the following scientific disciplines:

humanities section:

discipline: history

discipline: linguistics

discipline: literature studies

medical and health sciences section:

discipline: medical sciences

discipline: health sciences

social sciences section:

discipline: political and administrative sciences

discipline: legal sciences

exact and natural sciences section:

discipline: biological sciences

discipline: chemical sciences

discipline: physical sciences

discipline: Earth and environmental sciences

2. Education at the Doctoral School of Jan Kochanowski University in Kielce may be conducted in Polish and a foreign language.

3. STUDY DURATION: 4 years

4. FIELD OF SCIENCE*: humanities, medical sciences and health sciences, social sciences, exact and natural sciences

5. SCIENTIFIC DISCIPLINE*: history, linguistics, literature studies, medical sciences, health sciences, political and administrative sciences, legal sciences, biological sciences, chemical sciences, physical sciences, Earth and environment sciences

6. TOTAL NUMBER OF HOURS WITH A DIRECT PARTICIPATION OF ACADEMIC TEACHERS OR OTHER PEOPLE CONDUCTING CLASSES: 500, including: 1st year - 165 hours, 2nd year - 160 hours, 3rd year - 145 hours, 4th year - 30 hours.

7. CONCEPT AND EDUCATIONAL OBJECTIVES:

The study program is designed to equip the graduate with a wide range of competences that allow them to create and disseminate new knowledge based on their own research. The study program is aimed at acquiring specialist knowledge, skills and social competences enabling planning, conducting and popularizing scientific research, including in a foreign language. The study program aims to achieve competences in the field of broadly understood communication and scientific entrepreneurship, the possibility of obtaining funds for research and management of a scientific project. In terms of teaching competences, the aim of the education program is to equip the graduate with knowledge and skills in the field of modern education methods, including conducting various forms of classes at the university.

* doctoral student chooses one of the listed fields/disciplines

Explanation of markings:

SD (before the underscore) - directional learning outcomes at the doctoral school

W - knowledge category

U- skill category

K - category of social competences

01, 02, 03 and subsequent - learning outcome number

1. LEARNING OUTCOMES:

Symbols of learning outcomes	After completing education, the graduate:	Reference the learning outcomes to:	
		universal characteristics for level 8 of the Polish Qualifications Framework (Act on the IOS)	level of learning outcomes for qualifications at levels 8 of the Polish Qualifications Framework (Ministry of Science and Higher Education)
in the scope of KNOWLEDGE			
SD_W01	has expanded knowledge of the latest scientific achievements, including theoretical foundations, general issues and selected detailed issues specific to the scientific discipline in which their doctoral dissertation is prepared	P8U_W	P8S_WG
SD_W02	has advanced knowledge of development trends in disciplines related to the conducted research topic	P8U_W	P8S_WG
SD_W03	has expanded knowledge in the field of scientific research methodology, including statistical analysis of results	P8U_W	P8S_WG
SD_W04	has advanced knowledge in the field of teaching methodology at the university	P8U_W	P8S_WG
SD_W05	has knowledge of preparation of scientific publications, including on the basis of open access	P8U_W	P8S_WG
SD_W06	knows the economic, legal and ethical conditions of research activities, in particular the forms of obtaining funds and the principles of creating research projects	P8U_W	P8S_WK
SD_W07	formulates important, current and unresolved problems in the field of science, in which they are being educated, especially in the discipline in which their doctoral dissertation is prepared	P8U_W	P8S_WK
SD_W08	has expanded knowledge of intellectual property law and basic principles of knowledge transfer to the economic and social sphere as well as commercialization of research results and know-how related to these results	P8U_W	P8S_WK
in the scope of SKILLS			
SD_U01	is able to define the purpose and subject of research, formulate research hypotheses in the field of discipline in which their doctoral dissertation is prepared	P8U_U	P8S_UW
SD_U02	can develop a research plan, including an advanced research procedure and an original research concept	P8U_U	P8S_UW
SD_U03	can use knowledge from various disciplines to identify, formulate and creatively solve complex problems or carry out research tasks	P8U_U	P8S_UW
SD_U04	can assess the practical aspect of research results	P8U_U	P8S_UW
SD_U05	is able to present the results of scientific research in the form of oral presentations and written studies observing the methodological principles, copyright and ethics, and initiate a scientific debate in the international scientific environment	P8U_U	P8S_UK
SD_U06	is able to disseminate the results of scientific research in the form of oral presentations or written studies	P8U_U	P8S_UK
SD_U07	can practically use a foreign language in research activities	P8U_U	P8S_UK
SD_U08	is able to plan and implement research projects of a national or international nature	P8U_U	P8S_UO
SD_U09	can carry out research activities in a team	P8U_U	P8S_UO
SD_U010	can plan the development of their own competences, actively work for their	P8U_U	P8S_UU

	own development and inspire the development of others		
SD_U011	can plan didactic classes and implement them using modern research methods and tools	P8U_U	P8S_UU
in the scope of SOCIAL SKILLS			
SD_K01	is able to critically analyze their own contribution to the development of the discipline, in which their doctoral dissertation is prepared and the scientific achievements of other researchers in this discipline	P8U_U	P8S_KK
SD_K02	can justify the importance of knowledge in solving cognitive and practical problems	P8U_U	P8S_KK
SD_K03	can fulfill the obligations of a researcher and creator towards the society and initiate actions for the public interest,	P8U_U	P8S_KO
SD_K04	can think in an entrepreneurial manner and act actively	P8U_U	P8S_KO
SD_K05	can independently carry out scientific research, including the principle of public ownership of scientific research results and intellectual property protection	P8U_U	P8S_KR

2. CLASSES WITH THE LEARNING OUTCOMES AND PROGRAM CONTENT ASSIGNED TO THEM:

Subject		Year/ number of hours/ form of credit	Programme content	Reference to learning effects in a given specialization
1.GENERAL SUBJECTS				
1.1	Scientific communication	I/ 10/ credit with a grade	Principles of publishing scientific research results in open access mode, principles of preparing scientific publications, presenting research results, methods of disseminating knowledge	SD_W05 SD_U05 SD_U06 SD_K01 SD_K05
1.2	Scientific entrepreneurship	I/ 10/ credit with a grade	Possibilities of obtaining funds for basic, industrial and development research, ability to use IT systems enabling application for funds for scientific research, spending and reporting funds for research, economics in science, project and time management. Possibilities to finance scientific fellowships - national and international programs	SD_W06 SD_W08 SD_U04 SD_U07 SD_U08 SD_U09 SD_K03 SD_K04
1.3	Research ethics and intellectual property protection	I/ 5/ credit with a grade	The main issues of contemporary ethics. Ethics and morality and other value systems. Functions of professional ethics and their determinants. The ethical values of science. Ethical responsibility in science - the code of ethics of a scientist, international conventions. Concepts of protection of industrial property and copyright. Personal copyright and property rights. Protection of databases, inventions, utility models and industrial designs. Trademarks. Fighting unfair competition. Copyright agreements.	SD_W06 SD_W08 SD_U04 SD_K03 SD_K05
1.4	Commercialization of scientific research results	I/ 5/ credit with a grade	Research results as a subject of commercialization. Commercialization methods of scientific research results for practice: direct and indirect commercialization, licensing. Creation of spin off enterprises, types of companies. Conditions for knowledge and technology transfer. Academic entrepreneurship. Commercialization paths. Criteria and methods for assessing innovation projects.	SD_W08 SD_U04 SD_K02 SD_K05
1.5	Methodology of conducting classes at the university	I/ 30/ credit with a grade	Methodology for conducting various forms of classes, including a laboratory. Modern education methods: project based learning, problem based learning, research based learning, e-learning, tutoring.	SD_W04 SD_U11

1.6	Philosophy/Economics **	III/ 30/ exam	<p>Philosophy: Socratic-Platonic philosophy; moderate realism; post-Aristotelian schools; early Christianity; philosophical views of St. Augustine; medieval philosophy (scholasticism); views of Thomas Aquinas; Polish medieval school of law of nations; anthropocentric philosophy of humanism and Renaissance; Polish philosophy of the 16th and 17th centuries; philosophy of R. Descartes and modern rationalism; socio-political thought in the philosophy of rebirth and enlightenment; German philosophy: I. Kant and G. F. Hegel; main ideas of Polish romanticism; selected issues from contemporary philosophy (existentialism, pragmatism, phenomenology, postmodernism); contemporary Polish philosophy: R. Ingarden, T. Kotarbiński, J. Tiszner.</p> <p>Economics: Identifying the subject of economics; market, supply and demand - factors determining them; elasticity of demand and supply; consumer behaviour; producer on the market, its role and functions; market structures; production factor markets; market failure and external outcomes; macroeconomic accounts (national income account and its determinants); state budget, budget deficit, public debt - basic relationships and dilemmas; money market and financial market institutions; unemployment and its impact on the economy; inflation, deflation, slumpflation and stagflation; socio-economic development, economic growth and the business cycle; economic policy of the state.</p>	
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2. DOMAIN SUBJECTS IN SECTION

2.1	Statistical data analysis	I/ 10/ credit with a grade	<p>Basic concepts of statistics. Types of statistical methods in scientific research. Types of variables. Population and sample. Sampling. Statistical features and their types. The notion of statistical feature distribution. Point and interval estimation. Statistical hypotheses. General principles of testing statistical hypotheses. Type I and II errors. Statistical test power. Basic operations on data (filtering, sorting, data export). Statistical description - selection, determination and interpretation of statistical measures, graphic presentation of data according to their type and measurement scale used. Assessment of distribution normality by graphical methods and by means of formal statistical tests. Testing hypotheses with parameters of one or two populations. Student's T-Tests. The use of parametric and nonparametric tests. Distribution compliance testing. Examination of feature independence. Statistical inferences in correlation and regression analysis. Examples of using variance analysis. Post-hoc tests.</p>	SD_W03 SD_U02 SD_K05
2.2	Specialist English	I-II/ 60/	Practical use of English in research activities: presentation of research results in	SD_W05 SD_U05

		credit with a grade	English, translation and writing scientific texts, specialist terminology for the scientific field.	SD_U06 SD_U07
2.3	Modern research methods	I/ 10/ credit with a grade	Advanced experimental or numerical research methods and techniques specific to the field of scientific research.	SD_W02 SD_W03 SD_U03 SD_U11 SD_W02 SD_K02

3.1 SPECIALIST SUBJECTS IN THE SECTION				
3.1.1.	Doctoral seminar	I-IV/ 40/ credit with a grade	Division of scientific work into research stages, selection of issues and review of the state of knowledge, tools to facilitate the preparation of literature review, preparation and presentation of scientific research results.	SD_W02 SD_W03 SD_W07 SD_U01 SD_U02 SD_U05 SD_K01 SD_K02
3.1.2.	Methodological consultations	I-IV/ 90/ credit with a grade	Work with a promoter / auxiliary promoter in the field of scientific research, including the preparation of an individual research plan and preparation for mid-term evaluation.	SD_W01 SD_W02 SD_W03 SD_W07 SD_U01 SD_U02 SD_U03 SD_U08 SD_U010 SD_K04
3.1.3.	Didactic practices	I-III/ 35/ credit with a grade	Conducting or participating in teaching activities.	SD_W04 SD_U011
3.1.4.	Scientific fellowship	I-IV/ 30 days/ confirmation of the fellowship	Completing at least 30 days of scientific fellowship abroad during the whole course of education, included in the individual research plan.	SD_W02 SD_W03 SD_U07 SD_U08 SD_U09 SD_U010 SD_K04
3.2. SPECIALIST SUBJECTS IN THE DISCIPLINE OF <i>HISTORY</i>***				
3.2.1	Methodology of history and methods of historical research	Specificity of research methods in the field of political, social and economic history; History and historical memory; History and historical politics; Autobiographical narratives and the biographical method; In search of new research methods in contemporary humanities; Research technique and the research area.		SD_W01 SD_W02 SD_W07 SD_U01 SD_U03
3.2.2	Scientific editing	Terminology in the field of scientific editing; Theorists and practitioners: editorial art in historical terms; Issues of layout and editorial preparation of various types of publications: source, collective work, monograph, biography, dictionary; Principles of text preparation and textological apparatus; Systematics of publishing houses and contemporary publishing instructions.		SD_U07 SD_K04
3.2.3	Statistics and historical demography (foreign language)	Statistics and historical demography: specificity of research and research methods. Historical research on consumption and living standards. Economic conditions of the fate of Poles in the 19th and 20th centuries. Issues of population / demography / the Russian Empire and the transformation of demographic structures in the Empire. Population structure by gender and age as the basis for demographic analysis. Analysis of the natural movement of population on Polish lands in the 19th and 20th centuries. Average life expectancy of the population of the Polish lands in the 19th and 20th centuries against a comparative European background. Migration of people. Socio-professional structure of the population of the 19th and 20th century Polish territories.		
3.2.4	Historiography	Analysis of contemporary trends in historical research: From modernism to contemporary orientations in European historical science; Interdisciplinarity in the humanities; Anthropological inspirations in reflection on the past; Non-standard models of presenting the past in contemporary historical reflection; Research turns in modern humanities.		
3.2.5	Source workshops; from antiquity to the end of the 18th century (foreign language)	Narrative and registration sources - typological aspects and social functions - from antiquity to enlightenment. Medicine and care for the poor in the contexts of nature, astrology and religion - from antiquity to enlightenment. The European Reformation and its social subsoil - from Christian antiquity to the		

		renewal of religious life in the 15th century.	
3.2.6	Source workshops; 19 th and 20 th centuries (foreign language)	Basic principles and rules of research and scientific works in the field of the 19th century history. Types of historical sources in the study of recent history. Characteristics of the scientific workshop of the 19th and 20th century historian. Types, character and typology of historical sources. Internal and external criticism of sources. Interpretation of documents and source documents. Selection of research methods and tools. The process of establishing historical facts and reconstruction of the historical process. Analysis of content and cognitive values of manuscripts, printed, iconographic and digital sources. Practical task - work on manuscripts, printed and digital sources. Ways to verify research skills.	
3.2.7	Studies on historical discourse	The concept of discourse; study of the genesis, variability and universals of discourses. Discourse interpretation rules. Forms, research practices and interpretation possibilities in contemporary humanities. Analysis of contemporary concepts of historical discourse (postcolonial historiography; feminist discourse; idea of power discourse by Michel Foucault). Anthropologization of history. The concepts of Jacques Derrida and Roland Barthes. The poetics of historical writing by Hayden White.	
3.2.8	Theory and philosophy of language	Place of linguistics in the structure of science. Metalinguistics as a reflection on the methods of linguistics. Science paradigms and linguistic paradigms. Language ontological status. Linguistic epistemology. Cultural functions of the language.	
3.2. SPECIALIST SUBJECTS IN THE DISCIPLINE OF <i>LINGUISTICS</i>***			
3.2.1.	Theory and philosophy of language	Place of linguistics in the structure of science. Metalinguistics as a reflection on the methods of linguistics. Science paradigms and linguistic paradigms. Language ontological status. Linguistic epistemology. Cultural functions of the language.	SD_W01 SD_W02 SD_W07 SD_U01 SD_U03 SD_U07 SD_K04
3.2.2.	Studies on text and discourse	Category of text and discourse in linguistic research. Text and discourse analysis - various approaches and research schools. Discourse analysis methods. Discourse and genre of expression and style. Variations of discourse.	
3.2.3.	Linguistic research workshops	Characteristics of the language researcher's scientific work. Preparation for scientific work. Principles of scientific writing (citation, footnotes, bibliography). Analysis and selection of sources. Formulating critical judgments. Principles of funding scientific research.	
3.2.4.	Editorial and scientific editing	Principles of scientific editing of a literary text. Presentation of the concepts and terms used in textology and scientific editing. Characteristics of editorial procedures: the methods of a textologist and scientific editor. Critical text preparation.	
3.2.5.	Monographic lecture (English)	Multi-faceted presentation and analysis of the linguistics field chosen by the lecturer. Lecture in English.	
3.2.6.	Monographic lecture (English)	Multi-faceted presentation and analysis of the linguistics field chosen by the lecturer. Lecture in English.	
3.2.7.	Monographic lecture (Russian)	Multi-faceted presentation and analysis of the linguistics field chosen by the lecturer. Lecture in Russian.	
3.2.8.	Monographic lecture (Russian)	Multi-faceted presentation and analysis of the linguistics field chosen by the lecturer. Lecture in Russian.	
3.2. SPECIALIST SUBJECTS IN THE DISCIPLINE OF <i>LITERATURE STUDIES</i>***			
3.2.1	Literature - contexts and correspondence	Modern and postmodern humanistic theories as a context for the interpretation of a literary work (anthropology, psychoanalysis, feminism, postcolonial theories and others). A contemporary approach to the problem of correspondence of arts and intersemiotic translation. The influence of new media on theoretical concepts in literature and other arts, and the directions of	SD_W01 SD_W02 SD_W07 SD_U01 SD_U03 SD_U07

		their correspondence. Influence of the spectacle and performance theory on interpretation strategies of literature and its cultural contexts.	SD_K04
3.2.2	Reading a literary work - theory and practice of interpretation	From classical to postmodern interpretation. Cultural turn and its consequences in the study of literary works. Diversity and multi-directionality of reading. Interpretative practices triggering various cultural contexts, allowing to read texts in entanglements and relationships with history, politics and ideology. Reading and human experience: autobiographical context; reading in an intersemiotic, comparative, intertextual contexts. Reading ethics.	
3.2.3	Editorial and scientific editing	Principles of scientific editing of a literary text. Presentation of the concepts and terms used in textology and scientific editing. Characteristics of editorial procedures: the methods of a textologist and scientific editor. Critical text preparation.	
3.2.4	Literary scholarly workshops	Characteristics of the literature researcher's scientific work. Preparation for scientific work. Principles of scientific writing (citation, footnotes, bibliography). Analysis and selection of sources. Formulating critical judgments.	
3.2.5	Theory and philosophy of language	Place of linguistics in the structure of science. Metalinguistics as a reflection on the methods of linguistics. Science paradigms and linguistic paradigms. Language ontological status. Linguistic epistemology. Cultural functions of the language.	
3.2.6	Monographic lecture (English)	Multi-faceted analysis and interpretation of literary texts selected by the lecturer, associated with the presentation of the latest achievements of the humanities. Showing the contexts of a literary work (artist's biography, culture, epoch, philosophical trends, etc.). Lecture in English.	
3.2.7	Monographic lecture (English)	Multi-faceted analysis and interpretation of literary texts selected by the lecturer, associated with the presentation of the latest achievements of the humanities. Showing the contexts of a literary work (artist's biography, culture, epoch, philosophical trends, etc.). Lecture in English.	
3.2.8	Monographic lecture (Russian)	Multi-faceted analysis and interpretation of literary texts selected by the lecturer, associated with the presentation of the latest achievements of the humanities. Showing the contexts of a literary work (artist's biography, culture, epoch, philosophical trends, etc.). Lecture in Russian.	
3.2. SPECIALIST SUBJECTS IN THE DISCIPLINES OF <i>MEDICAL SCIENCES AND HEALTH SCIENCES</i> ***			
3.2.1	Basics of modern oncology	Cancer epidemiology. Incidence structure, trends in incidence and mortality rates. Risk factors for cancer. Molecular basis of carcinogenesis. Principles of cancer prevention and recognition. Treatment of cancer: surgery, radiotherapy, chemotherapy, hormone therapy, immunotherapy. Side effects of cancer treatment. Rehabilitation in oncology.	SD_W01 SD_W02 SD_W07 SD_U01 SD_U03 SD_U07 SD_K04
3.2.2	Health policy in EU countries	Contemporary health problems in the European Union. World Health Organization reports. 21st century civilization diseases. Geriatrics - a new health protection problem. Health and social and living situation of the elderly in Poland and in the world. Global health situation. Globalization processes - challenges and threats. International health organizations. Contemporary challenges and directions of health policy development.	
3.2.3	Nutrition and nutritional treatment	The principles of human nutrition in various periods of life and physiological states. Prevention and dietary treatment in the most common chronic non-communicable diseases. Public health problems resulting from improper nutrition. Diagnosis of clinical malnutrition and qualifying the patient for nutritional intervention. Parenteral and enteral nutrition.	
3.2.4	Personalized medicine	Complexity of diseases - differences between patients suffering from the same disease. Precise diagnostic methods (molecular diagnostics, pathomorphological tests). Selection of appropriate therapies for specific patient groups (personalized targeted therapy – “tailor-made”). Molecular and biochemical markers enabling individual selection of therapy and determining prognostic factors.	
3.2.5	Communication in	The role and importance of clinical communication and the quality	

	the therapeutic team	of relationships between healthcare professionals. Relations between patients and medical staff. Clinical communication in accordance with world standards.
3.2.6	The molecular basis of medicine	Genetic diversity of the population. Etiology and pathogenesis of selected diseases at the cellular and molecular level (including those associated with damage to individual genes and mitochondrial, cancer, allergic, viral and immunological diseases). Diagnosis of diseases at the level of: genome, transcriptome, proteome and metabolome. The importance of molecular and biochemical markers in the diagnosis and treatment of cancer and inflammatory diseases. Practical possibilities of modern medicine with individualized treatment and minimization of side effects. New technologies of functional genomics, including basics of pharmacogenomics.
3.2.7	Contemporary antibiotic therapy	Antimicrobial resistance to microorganisms. Classes of antibiotics currently used in therapy, their cellular goals and mechanisms of bacterial defence against a given antibiotic. Blocking cell wall synthesis. Disorders of the cell membrane. Antibiotics that disrupt bacterial protein synthesis. Antibiotics that interfere with DNA and RNA synthesis. Metabolic pathway inhibitors. Strategies for looking for new antibacterial drugs.
3.2.8	Immunology and vaccinology	Types of immunity and types of immunization. Organization of vaccination in Poland. Mandatory and recommended immunization. Vaccinations of persons exposed to infection in connection with their work. Vaccinations in international travels. Basic principles for the use of vaccine preparations. Indications and contraindications for vaccination. Undesirable post-vaccination reactions. Legal basis for vaccination. The importance of immunotherapy in the treatment of inflammatory and cancer diseases, advances in oncology and the treatment of cancer and inflammatory diseases thanks to immunotherapy.
3.2.9	Environmental health threats	Human as an element of the environment. Human health and its environmental conditions. Biological, chemical and physical factors present in the natural environment, food and living places threatening human health - effects of the impact. Methods for measuring the health effects of environmental factors and biomarkers of exposure. Climate and health. Global warming. Environmental accidents and disasters. Atmospheric air, soil and water pollution. Health effects of noise, vibration, ionizing and electromagnetic radiation. Sick building syndrome. Sunlight. Civilization diseases and infectious diseases. Dangerous working conditions. Bioterrorism. Psychosocial determinants of human health. Risky behaviours and their impact on health.
3.2.10	Public health (English)	Health care system - basic concepts and system components. Public health - social, cultural and economic conditions. The importance of public health for the individual and society. Historical and evolutionary concept of health. Socio-medical and socioecological health paradigms. Prevention and its importance for the modern concept of health. Mental and psychosocial determinants of health, the most common psychosomatic disorders. Pathomechanisms of risk factors. Health promotion and family medicine. Pro-health behaviours. Factors conditioning behaviour during a disease: microsocial, macrosocial, mesosocial.
3.2.11	Epidemiology and demography (English)	The role, goals and tasks of epidemiology in modern medicine and health sciences, with particular emphasis on preventive medicine. Epidemiology of cancer based on available population data (cancer registries). Oncology and demography. Contemporary demographic processes. Basic measures of population health (positive and negative measures); importance of coefficient standardization.
3.2.12	Medical law (English)	Medical standards for practicing medicine. Organizational fault as a category of liability of the entity performing medical activity. Occupational deontology. Content of patient's rights to health services of a determined quality. The patient as a consumer and a party to the contract with the doctor. The essence of organization and conditions for providing healthcare services. Equal access to healthcare services in the Constitution of the Republic of Poland.

		The position of the payer of guaranteed services in relation to the recipient and the patient. Public health insurance system. Consequences of refusing or postponing the provision of a health service. The criminal law approach to the failure to provide health services. Patient's consent to provide health services. Calls for proposals for the provision of health services under subcontracting. Clinical trials of medicinal products.	
3.2. SPECIALIST SUBJECTS IN THE DISCIPLINE OF <i>POLITICAL AND ADMINISTRATIVE SCIENCES</i>***			
3.2.1	Theory of politics	Politics as a phenomenon and subject of research. Rules, norms, rules determining political processes. Selected trends and concepts of political theory. Subjects of politics. Objectives of political actions and decisions.	SD_W01 SD_W02 SD_W07 SD_U01 SD_U03 SD_U07 SD_K04
3.2.2.	Political doctrines and ideas	The essence of political doctrine. Links between political doctrine and political program and political action. Analysis of selected contemporary political doctrines. Classical and post-modern doctrines.	
3.2.3.	Theory and practice of political parties	Theories regarding the formation and development of political groups. The goals of a political party. Organization of a contemporary political party. The importance of the program in activities of a political party. Selected types of political parties. Political thinking and party group programs. The evolution of political parties in the 21st century.	
3.2.4.	Political communication	The essence of political communication. Principles of political communication. Political discourse. Channels of political communication.	
3.2.5.	Strategic foresight in politics	Forecasting methods and tools in the political decision making process and in political action. Forecast models. Factors determining the processes of planning and building scenarios. Forecasting workshops.	
3.2.6.	Contemporary public administration	Principles of operation of modern administration. The goals of modern public administration. The role of public administration in the legal system of a modern state.	
3.2.7.	Selected public policies	Discussion of the essence of public policies. The specificity of public policies. Public policy and politics. Instruments of action in implementing public policies.	
3.2.8.	International relations and security	Features of contemporary international relations. Entities of contemporary international relations. International security - security subjects and objects. Threats to modern security. The institutionalization of contemporary international relations.	
3.2. SPECIALIST SUBJECTS IN THE DISCIPLINE OF <i>LEGAL SCIENCES</i>***			
3.2.1	Economic analysis of law	Examination of law using economic methods. Research on the effectiveness of legal regulations. Positive economic law analysis. Normative economic analysis of law. Competition law, labour law, tax law.	SD_W01 SD_W02 SD_W07 SD_U01 SD_U03 SD_U07 SD_K04
3.2.2	Development trends of civil law	The essence and sources of civil law. Development trends of civil law. Directions of the evolution of civil law norms.	
3.2.3	Principles of criminal trial in a comparative aspect	The essence of a criminal trial. Basic principles of a criminal trial. Analysis of the criminal trial in a comparative aspect.	
3.2.4	Administrative act in theoretical and practical aspect	Types of administrative acts. Content of administrative acts. Effectiveness of administrative acts. Practice of action by means of administrative acts.	
3.2.5	Chinese philosophy and law with elements of the Chinese language	Concept - the doctrine of Chinese law. Basic assumptions and norms of Chinese law. Relationship between law and philosophy. Basics of Chinese language.	
3.2.6	Current trends in theory of law	Contemporary theory of law. Assumptions and concepts of changes in contemporary law. Contemporary theory of state and law.	
3.2.7	Protection of human rights by the Council of Europe	The role of the Council of Europe in the global system of protecting human rights and freedoms. Competences and tasks of the Council of Europe. Areas of practical activities of the Council of Europe for the protection of human rights.	
3.2.8	Evolution of the rule of law principle	Public administration as an element of the legal order. The legal system of modern countries and the structure and functioning of	

	determining public administration	public administration.	
3.2. SPECIALIST SUBJECTS IN THE DISCIPLINE OF <i>BIOLOGICAL SCIENCES</i>***			
3.2.1	Human microbiomes	What is a microbiome? What role does it play in biological processes? Human Microbiome Project. Earth microbiome project.	SD_W01 SD_W02
3.2.2	DNA damage and repair mechanisms	Types and mechanisms of DNA damage: loss of base, intercalation, modifications of nitrogenous bases: alkylation, methylation, hydrolytic deamination, oxidation, single- and double-stranded DNA breaks, DNA-DNA cross-links, DNA-protein. DNA damage repair mechanisms (systems): BER, NER, MMR, NHEJ, homologous recombination (HR), direct repair. DNA damage and its repair / apoptosis. Research methods for DNA damage and repair: comet test: alkaline, neutral, FISH, pulsed field electrophoresis, chromosomal aberration, micronucleus test, clonogenic test, gamma-H2AX test, plasmid conformational transition analysis, PCR techniques: RFLP-PCR, PCR in real-time (TagMan), HRM-PCR, immunoserological methods: ELISA, confocal microscopy, flow cytometry.	SD_W07 SD_U01 SD_U03 SD_U07 SD_K04
3.2.3	Global environmental changes	Destruction of plant communities - extermination of plant and animal species, their causes and consequences. Extermination of moist equatorial forests, pollution of rivers and coastal ocean waters, atmospheric pollution and their impact on climate. Movements of lithosphere plates and their consequences on the Earth's surface (earthquakes, volcanic eruptions and accompanying phenomena e.g. tsunamis). Climate changes in the history of the Earth. Climate drying, humidity increase, air temperature changes, glaciers melting, extreme weather phenomena. Space threats (asteroids).	
3.2.4	Biodiversity - theory and practice	Biodiversity concepts. Classification. The value of biodiversity within a species. Continuum theory. Neutral theory. The theory of metapopulation. Fractal Theory. Aggregated Poisson distribution.	
3.2.5	Epigenetic mechanisms	Epigenetic regulation of chromatin processes. Post-translational modification of histones and recognition of specific markers in histones. Reconstruction of chromatin and protein complexes involved in this process. Impact of the environment on changes in genetic expression. Metabolic regulation of DNA and histone methylation. Non-coding RNA-degradation of mRNA and its role in the formation of constitutive chromatin. The role of epigenetics in adaptive evolution. Impact of environmental factors on epigenetic processes. Tumour epigenetics. Epigenetic mechanisms in immunological, neurological and metabolic disorders. Epigenetic silencing of transgenes.	
3.2.6	Gene expression analysis	Study of gene products by imaging, amplification, probe hybridization or sequencing-based detection methods. Regulation of gene expression. Gene networks. Gene expression database.	
3.2.7	Bacterial antigens	Morphology and fine structure of bacteria. Bacterial virulence factors. Terminology (epitope, allergen, superantigen, tolerogen, immunoglobulin). Exogenous antigens. Endogenous antigens. Autoantigens. Neoantigens. Antigenic specificity.	
3.2.8	Trends in biological sciences	Is there an alternative to stem cells? Alternative methods of regeneration. Secrets of plants. Photosynthesis of cereals grains. Artificial life from the laboratory (<i>Paris japonica</i>).	
3.2. SPECIALIST SUBJECTS IN THE DISCIPLINE OF <i>CHEMICAL SCIENCES</i>***			
3.2.1	Selected issues of modern organic chemistry	Contemporary problems of organic compounds stereochemistry. Techniques and methods of synthesis. Biocatalysis.	SD_W01 SD_W02 SD_W07
3.2.2	Selected issues of the latest inorganic, coordination and bioinorganic chemistry	Interesting ligands used in the latest syntheses of complex compounds. Coordination compounds in medicine and biomedical sciences. The latest physicochemical methods used in coordination and bioinorganic chemistry. Multi-core complexes as the basis of multifunctional molecular materials. Pros and cons of modern theories describing coordination binding.	SD_U01 SD_U03 SD_U07 SD_K04
3.2.3	Modern directions of physical	Theory of separation phenomena, adsorption and division, intermolecular interactions. Modern extraction and chromatographic	

	chemistry research	techniques. Gas, liquid column and thin layer, supercritical chromatography. Defragmentation of samples and determination of the structure of molecules with low and high mass values using low and high resolution, ionization methods (EI, CI, FI, FAB, MALDI, ESI, APCI). Combined technician GC/MS, LC/MS, CE/MS, MS/MS. Application of these techniques for quantitative and qualitative determinations. Theoretical foundations of the latest molecular spectroscopy techniques.	
3.2.4	Modern methods of analytical chemistry	Contemporary methods of instrumental analysis of selected chemical substances. Electroanalytical methods: advantages and limitations, selection criteria. Voltammetric techniques. Voltammetry using microelectrodes. Instrumental methods for determining trace elements.	
3.2.5	Selected research problems in the field of coal technology and modern alternative energy sources	The issue of using alternative energy sources. Controversy related to the implementation of clean coal technologies. The specificity of the adaptation of chemical, physical and physico-chemical research methods to determine the parameters characterizing the construction and composition of coals.	
3.2.6	Current issues in environmental geochemistry	Environmental geochemistry as a discipline of geochemistry. Application of geochemical studies in environmental sciences. The use of geochemical methods for studying environmental pollution and remediation of contaminated sites. Environmental geochemistry and health. Geotoxicology. Environmental forensics. Examples of the studies in the field of environmental geochemistry carried out in the Institute of Chemistry, Jan Kochanowski University in Kielce.	
3.2.7	Modeling of chemical reactivity with molecular dynamics simulations	Basic concepts of Born-Oppenheimer and Car-Parinello molecular dynamics approaches. Modeling of rare events: constrained dynamics and meta dynamics. Prediction of reaction paths and calculation of free-energy barriers.	
3.2.8	Molecular symmetry in chemistry	Prediction of chemical properties of molecules on the basis of their symmetry. Application of group theory in physical chemistry, quantum chemistry and inorganic chemistry. Relationship between symmetry	
3.2. SPECIALIST SUBJECTS IN THE DISCIPLINE OF <i>PHYSICAL SCIENCES</i>***			
3.2.1	Computer methods	Implementation of computer program, such as "mathematica", for the solution of physical problems.	SD_W01 SD_W02 SD_W07 SD_U01 SD_U03 SD_U07 SD_K04
3.2.2	Quantum Mechanics	Description of Quantum Mechanics within the Schroedinger, Heisenberg, and Feynman pictures. Theoretical lectures accompanied by exercises.	
3.2.3	Relativistic Quantum Mechanics	Consequences of special theory of relativity on Quantum Mechanics: Dirac and Klein-Gordon equations. Basic aspects of quantum field theory.	
3.2.4	Statistical methods	Statistical methods: determination of the parameters of a fit and their errors. Basic properties of the underlying mathematics necessary for statistics. Applications of the methods to concrete physical problems.	
3.2.5	Statistical physics	Basic features of classical and quantum thermodynamics: Bose-Einstein and Fermi-Dirac statistics.	
3.2.6	Atomic physics	Modern approach to atomic physics. Theoretical and experimental aspects of molecular spectroscopy.	
3.2.7	Introduction to the standard model of particle physics	Description of the Standard Model of particle physics: the Higgs particle and its decays, properties of the strong and the weak interactions.	
3.2.8	Introduction to general relativity and applications to astrophysics and cosmology	Fundamentals of general relativity (equivalence principle, movement in a strong gravitational field, gravitational waves). Astrophysics: stability of neutron stars. Standard model of cosmology.	
3.2. SPECIALIST SUBJECTS IN THE DISCIPLINE OF <i>EARTH AND ENVIRONMENT SCIENCES</i>***			
3.2.1	Zoning and altitudinal zonation of the Earth's epigeosphere	Epigeosphere in terms of geosystems. Epigeosphere transformations in different time scales. Hierarchization of environmental components. Zoning and non-zoning - causes and effects. Zoning of abiotic and biotic components. Altitudinal zonation - causes and	SD_W01 SD_W02 SD_W07 SD_U01

		<p>effects. Storey of abiotic and biotic components. Zoning and altitudinal zonation - similarities and differences. Zone and floor changes in the Quaternary. Morphoclimatology - basic concepts, research goals, history and contemporary state of research.</p> <p>Sculpture conditioned by endogenous and exogenous factors - their mutual relations and transformations in various climatic zones.</p> <p>Characteristics of individual morphoclimatic zones on the globe.</p> <p>The importance of the existence of a specific set of forms for the functioning of other environmental components in a given climate zone. Anthropogenic transformations in individual zones - the role and effects of human activities. Transformations of morphoclimatic zones in the history of the Earth - a relict sculpture.</p>	<p>SD_U03 SD_U07 SD_K04</p>
3.2.2	Contemporary problems of physical geography	<p>Review of current issues of physical geography in the light of the literature on the subject. Methodological concept of the river basin geocosystem. Methods for assessing soil erosion intensity. Ravine erosion in Poland. The impact of heavy rains on the transformation of loess areas. Lithological features of slope covers and their paleogeographic significance. Problems of the geographical environment of urban areas and the role of geographers in identifying them. Hydrometeorological processes in urban areas - causes of flood threats. Danger and flood maps of the urban area. Thematic maps as a source of information about the geographical environment. Usefulness of the content of the Hydrographic Map in the scale of 1: 50,000 for analysing the changes of the relief. Assessment of the ecological stability of the area in the light of its use and development. Determining the naturalness of small watercourses in the light of cartographic analysis and field mapping. Practical use of geographical science achievements. Impact of tourism on the geographical environment.</p>	
3.2.3	Geoinformation	<p>European and national trends in the use of GIS systems and the use of spatial information in the economy and administration. Sources of spatial data and basic methods of acquisition, processing, visualization and interpretation. Principles of programming and automation of data acquisition processes, spatial analysis and access to their results. Algorithms and data structures as well as methods of their implementation. Methods for representing and modelling spatial data as well as database design and management.</p>	
3.2.4	Modelling of processes and natural phenomena	<p>Geographic reality models (mental, topographic, cartographic, remote sensing). Methods of obtaining spatial data and performing spatial analyses. Administration of topographic object databases (BDOT) of general geographic objects (BDO), Land and Building Registry. Practical use of numerical models of land surface. Geovisualization on selected examples - interpretation and meaning. Geomarketing.</p>	
3.2.5	Functioning of geocosystems and environmental monitoring	<p>Geographic individuality of geocosystems. Selected manifestations of the functioning of river and lake geocosystems in the conditions of climate change and increasing anthropopressure. Current status, directions of threats, forms of protection of river and lake basin geocosystems (diagnostic studies). Natural and anthropogenic transformations of river and lake basin geocosystems. Modeling, scenarios of development of river and lake basin geocosystems in the conditions of observed climate changes and land use structure. The amended legal regulations for environmental monitoring in Poland. Poland's participation in the implementation of international conventions and programs.</p> <p>Monitoring information function. Documents containing information on the state of nature resources in Poland.</p> <p>Environmental protection inspection - new monitoring tasks. State Environmental Monitoring in Poland - monitoring subsystems: air, surface water, groundwater, soil, noise, ionizing radiation, nature, including forest monitoring, integrated monitoring of the natural environment. Current environmental problems and their solutions.</p>	
3.2.6	Applied physical geography	<p>Natural resources in Poland and in the world and their degradation and protection. Natural and ecological disasters. The idea of sustainable development. Mineral protection. Examples of the newest forms of conservation of land resources in Poland and in the</p>	

		world. Geoenvironmental cartography. Legal basis for protection of abiotic natural environment in Poland.	
3.2.7	Holocene paleogeography and Geoarchaeology	Selected problems of palaeogeography. Variability of environment components of Central Europe in the Late Glacial and Holocene. Methods of palaeogeographic reconstruction. Similarities and differences in chronostratigraphy, methods and interpretations used in natural sciences and humanities. Holy Cross Mts. Region in Roman time – human activity and environment. Geoarchaeology - basic concepts, scope and research goals. Sediments, soils and environmental interpretations. Palaeoclimate. The original context and formation of archaeological sites in various environmental conditions. Research methods of geoarchaeology and spatial analysis. Comparison of geological, pedological, biostratigraphical and archaeological stratigraphy and absolute dating methods. Palaeoenvironmental reconstructions on selected examples from the Palaeolithic, Neolithic, Bronze Age and Iron Age.	
3.2.8	Anthropopressure in the environment	Air, water and soil pollution. Trace elements. Acidification. Alkalization. Bioaccumulation. Bio- and geoindicators. Anthropogenic impact on forests ecosystems	

** Doctoral student chooses one of the subjects

*** From among the listed subjects, the doctoral student undergoes second and third year education within four compulsory subjects in a discipline (4 × 30 hours) and three selected subjects (3 × 15 hours) from non-compulsory, including at least one in another discipline within the same or another section. Out of the seven implemented subjects, at least two must be taught in a foreign language. The form of completing compulsory subjects is passed with an exam, and the subjects selected by a doctoral student are passed with a grade.

The list of compulsory subjects will be presented after the deadline for admission to the doctoral school.

3. METHODS OF VERIFICATION AND EVALUATION OF LEARNING OUTCOMES ACHIEVED BY THE DOCTORAL STUDENT DURING THE ENTIRE EDUCATION CYCLE:

The verification of the effectiveness of achieving the assumed learning outcomes at level 8 of the PQF is carried out by:

1) **subject exams** - questions prepared for the exam should not go beyond the content of the subject card carried out as part of the lecture/training. A doctoral student has the right to receive justification of the grade received during the exam.

The form of the exam: oral, written or practical is determined by the teacher and included in the subject card.

a) **oral exam** should be conducted in the presence of other doctoral students or employees.

b) **written exam** may be organized in a test or descriptive form. The exam is carried out in a didactic room, in which it is possible to properly place doctoral students, ensuring comfort of work and its independence. The person conducting the examination has the right to interrupt or annul the examination if the doctoral student's work is not unassisted (the doctoral student uses unauthorized materials, devices and other people's help).

2) **credit and credit with a grade** - the person conducting the classes determines the criteria for the grade, gives its components and justifies the grade received by the student. The evaluation criteria and its components are specified in the subject card.

3) **implementation of didactic practices** - learning outcomes achieved during didactic practices are complement the concept of education. The verification of effects takes place through the auditing of didactic classes and a survey carried out by students regarding the fulfilment of didactic duties by a doctoral student;

4) **implementation of a scientific fellowship** - confirmation of a scientific fellowship at a foreign university;

5) **the supervisor monitoring** of the implementation of the individual research plan of the doctoral student.

The verification of learning outcomes takes place in the mid-term evaluation of the doctoral student on the implementation of the individual research plan. The basis for assessment is the

mid-term report on the implementation of the individual research plan covering the period of two years of education at the doctoral school. The assessment is carried out by a commission appointed by the director of the doctoral school. The commission assesses the mid-term implementation of the individual research plan based on the mid-term report submitted by the doctoral student on the implementation of the individual research plan covering the period of education at the doctoral school in relation to the individual research plan of the doctoral student and an interview with the doctoral student.

All forms of verification of doctoral student's achievements obtained as part of classes in a given academic year are recorded in the periodic sheets of doctoral student's achievements.