CATALOG OF ELECTIVE DISCIPLINES

MASTER'S LEVEL

7M02124 - Polygraphy, 1st course

Discipline cycle	Name of the disciplines and their main content	ECTS
	1 SEMESTER	
BD	**CYCLE OF BASIC DISCIPLINES (BD)**	***5***
1.	**History and philosophy of science**	**4**
	General patterns and trends of scientific knowledge as a special activity for the production of scientific knowledge, taken in their development and interpreted in a historically changing sociocultural context. This scientific knowledge exists in the form of a huge number of scientific disciplines of a natural scientific and humanitarian nature. The history and philosophy of science is an independent scientific discipline that arose in response to the need to comprehend the sociocultural functions of science in the conditions of scientific and technological research	
2.	**Foreign language (professional)**	**4**
	Discipline forms a foreign language (intercultural) component of a professionally oriented communicative competence, which allows it to be further integrated into a multilingual and multicultural professional environment. The subject develops the abilities and qualities necessary for the formation of an individual and creative approach to mastering new knowledge; increases the general culture and education of undergraduates, the culture of thinking, communication and speech, forms a respectful attitude to the spiritual values of other countries and peoples.	
3.	**Higher Education Pedagogy**	**4**
	General ideas about pedagogical activity in the system of higher education; leading trends in the global educational space; a system of knowledge about pedagogical methods, teaching technologies and pedagogical skills; Fundamentals of pedagogical activity in higher education by means of interaction and management of the pedagogical process	
4.	**Psychology of management**	**4**
	The theoretical foundations of management psychology, the main directions, methods and means of psychological and pedagogical interaction, the basic psychological and pedagogical technologies. The discipline is integrated and prepares the future master for a conscious understanding of the specifics of management psychology; forms the specific competencies necessary during psychological activities.	

5.	**Basics of Research**	**5**
	The statement of relevance, novelty, the choice of methods of scientific work. Intellectual activity. Scientific research. Research Methodology. The preparatory phase of the research work. The main methods of searching for scientific information. The methodology of work on the manuscript of the study, especially the preparation and design. Methodology for preparing the report and presentations. Methodology for preparing grant applications. Project management in the field of science. State registration of research topics. Criterion and principles of project evaluation. Criteria for determining the size of a specific grant. The structure of the scientific project.	
6.	**Modern scientific problems in the printing industry**	**6**
	Classification of modern scientific problems in the printing industry. Problems of printing materials science. Innovations in the production of printed papers. New types of printing inks (hybrid, highly reactive inks, inks with a low degree of migration). General information about nanomaterials. Nanocrystalline materials. Nanocomposite materials. Nanotechnology in the production of paper, cardboard and materials for printing and packaging. Nanopaper. Nano ink for printers. Nanostructured paints. Safety issues and ethics in the application of nanomaterials. Problems of protection of printing products from counterfeiting. Environmental and chemical problems in printing	
	2 SEMESTER	
	CYCLE OF PROFILE DISCIPLINES (PD)	
7.	**Special types of printing**	**4**
	Introduction Classification of special types of printing. Types of printing processes. Technological processes of pad printing and their features. Features of prepress processes in pad printing. Technology for the printing process of pad printing. Printing equipment for pad printing. Properties and range of printing inks for pad printing. Modern screen printing, principles and features of screen raster printing. Lecture 9. Features of the copy process in screen printing. Screen materials used in screen printing. An assortment of printing inks for screen printing. Technological parameters of the printing process of screen printing. Overview of flexographic printing technology. Flexographic printing process. The main and auxiliary materials for flexographic printing.	
8.	**Modern materials of printing and post-printing processes**	**4**
	The main directions of development of the assortment of printing paper. Modern paper sizing methods. Possibilities for increasing the share of mineral components in the production of paper and cardboard, the development of a range of fillers. Improving the decoration and refinement of paper and cardboard. Assortment and properties of wrapping paper. Design types of paper and features of working with them. Features of production and types of cardboard. Cellulosic Composite Materials. Self-adhesive materials. Improving the properties of pigments for printing inks. Expanding the range of binders. Directions for improving UV curing	

	paints. UV paints for food packaging with a low degree of migration. Improving the range of printing inks. Directions for the development of the range of varnishes for finishing printed products. Improving the range of printing foil. Materials for lamination. Classification and assortment of coverslip materials.	
9.	**Nanotechnology in Polygraphy**	**6**
	Basic concepts and terms and definitions of nanolithography, the characteristic of the main types of nanolithography is given. The use of nanotechnology and nanotechnology materials in printing equipment, in the creation of various types of nanoprinting, nanopaper, nano-ink for printers, nano-color ink nano-glues. Nanotechnology and nanotechnology materials in printing and packaging. Nanography as a new digital printing technology. Beam nanolithography. Ultra high resolution nanoprinting. Continuous nanoprinting. Nanotechnology in the production of paper, cardboard and materials for printing and packaging. Nanostructured paints. Nano-adhesives in the post-printing process. Safety problems of nanotechnology application.	
10.	**Information Technologies in Polygraphy**	**5**
	Skills in building publishing systems; creation of software publishing systems; study of the system for building a database of publishing systems; the study of the prepress complex; familiarization with the use of networks in the automation of publishing systems. Devices for processing and online storage of information. Software, including system and application. Prompt display of information. Print output devices. Plate output devices. Problems of modeling and system algorithmization. Database design. Design of automated control systems in the printing industry	
11.	**Development of electronic information resources**	**5**
	Theoretical foundations and principles of the construction and functioning of Internet resources, technologies and methods for ensuring the functioning of an intensively developing global information network. The principles of creating the structure of information systems that ensure the use of intranet and extranet technologies. Information and telecommunication technologies. Conceptual framework for the development of electronic publications. Psychological and physiological characteristics of the perception of information. Hypertext. Hypermedia. Hypertext system. The principles of forming a system of links (hyperlinks) in the text. Glossary, reader articles, list of characters, bibliography, collection of Internet resources. Types of Internet resources and technology for finding educational information in electronic networks. Illustration of educational texts, including multimedia applications (photos, animation, audio and video clips).	