BASIC INFORMATION:

	The code	*The content*
Organizational unit	01.07.300	Faculty of Information Technologies
Abbreviation	01.07.300	FIT
Chair		The Department of Computer Graphics and Design (KatDiz)
Course/module	1.02.02.01.011	**Raster Graphics and Design**

TYPE OF COURSE:

Functional area	SPECIALIZED
Level of abstraction	MIDDLE
Course type - obligation	MANDATORY

COURSE REGISTRATION:

	The code	*The content*
Scientific field	1.00.00	Natural Sciences
Scientific area	1.02.00	Computer and Information Sciences
Narrow scientific field	1.02.02	Information Sciences and Bioinformatics
Subdistrict	1.02.02.01	Computer Multimedia and Graphics

COURSE DESCRIPTION:

Educational and professional goals:	Within this course, students acquire fundamental knowledge of computer graphics and design: hardware and software components of raster computer graphics, creating, manipulating, and storing graphic content, color theory, computer graphics for business purposes, computer graphics for the Internet, design elements, providing an excellent foundation for design, graphic processing, and project work. Using a selected software tool as an example, students are trained to independently create graphic objects and use them for various purposes.
Competences/educational outcomes:	Students will be proficient in: • Integrating text and images • Integrating bitmap and vector graphics • Creating moderately complex raster graphic works • Basic and intermediate user-level proficiency in working with computer graphic software like Adobe Photoshop and Adobe Camera Raw • Working independently or in teams
Skills mastered:	Working with standard computer graphic software for processing raster formats (Adobe Photoshop). Processing RAW digital formats through Adobe Camera Raw.
Course content:	Fundamentals of computer graphics: • Overview of the development of computer technology and graphics • Visual communication: the era of rapid and significant changes, visual language • Data presentation: preparing presentations, hardware support for presentations, essential elements of a quality presentation, preparing the presentation space, types of presentations. Hardware aspects: • Scanners: working principles and types of scanners, OCR - Optical Character Recognition

	• Classical and digital photography: classic camera (film-based), digital camera, technical characteristics of modern digital cameras, comparison of classic and digital photography • Monitors: working principles and types of monitors, comparison of CRT and LCD monitors • Printers: basic characteristics of printers, laser printers, inkjet printers, thermal printers, piezo printers, multifunctional devices Software aspects: • Vector and bitmap computer graphics: basics of professional graphic support programs: Adobe Photoshop, Corel, • Graphic file formats • Files for bitmap graphics, files for vector graphics, file formats of modern graphic programs, Microsoft Windows Bitmap BMP, Encapsulated PostScript EPS, Graphics Interchange Format GIF, Joint Photographic Experts Group JPEG... • Computer graphics elements in Microsoft Office • Microsoft PowerPoint • Paper formats • Fonts: basics of typography, text editing elements, letter components, font types, various font effects • Integrating text and images • Colors: origins and perception of colors, properties, color classification, color psychology, the meaning of colors in various cultures, color combinations, RGB model, CMYK model, color wheel, color schemes. • Business representation: company identity and logos, types of logos, computer graphics in business reporting examples. • Tables and charts: table elements, data representation in tables, data representation using charts, chart elements, chart types. • Computer graphics in medicine and industry • Computer graphics on the internet • Computer design: modern trends, examples of good and bad design, optical illusions.

COURSE METRICS:

ECTS	Teaching activities (lesson)						Individual work		TOTAL hours of work
	Contact lessons		Exercises and trainings	Seminar and stud. papers	Pedagogical workshops	Professional and clinical practice	Individual. and group learning	Source research	
	R	E							
5	20	10	30	24			60	6	**150**

Teaching languages:	**English**			

ACCESS CONDITIONS

Code	Course/Module title	Grade	Description of conditions (additional)

COURSE METHODOLOGY

Lectures are delivered according to a set schedule, using modern presentation and demonstration tools and techniques, with interactive methods employed to gain insight into students' prior knowledge and specific experiences related to the subject matter, as well as to understand the continuity of material comprehension.

During lectures, students are obligated to consult with the supervisors of the relevant Department of Computer Graphics and Design.

Lectures are conducted using didactic and educational content in electronic and digital form (including recorded lectures and mentor exercises) on various video presentation media.

The overall teaching process is carried out using information and communication technologies (ICT), allowing students to actively engage in the knowledge acquisition process through computer-assisted learning and research, achieving a deeper interaction with educational content and applying research techniques in the learning process.

Exercises are designed for the practical processing of material in the field of computer graphics. The content of the exercises follows the thematic units of the lectures. During practical exercises, students will master techniques for independently creating graphic objects and using them for various purposes with the help of appropriate software support. Exercises are accompanied by appropriate graphic examples and multimedia presentations. During exercises, students are obligated to consult with the supervisors of the relevant Department of Computer Graphics and Design.During exercises, students create professional reports that are evaluated by the exercise supervisor. The task of the practice supervisor and the student is to ensure the comprehensive application of various specific didactic methods and techniques in practice.

Program of exercises in vector graphics includes the following topics:

- Introduction to raster graphics
- Concepts
- Use of raster graphics
- Basic concepts
- Launching the program
- Working environment
- Choosing measurements and document types
- Tools in Adobe Photoshop
- Zooming and moving the workspace
- Opening a new drawing, existing, saving, closing, undoing, redoing operations
- Pages (setup, size and orientation, adding, deleting, order)
- Alignment (rulers, grid, guidelines)
- Drawing and defining lines and explanation of tools used for that purpose
- Drawing shapes (basic, rounded, cut, derived...)
- Working with objects (selection, copying, duplicating, copying properties, positioning, alignment, order, scaling, rotating, mirroring, skewing, and distorting...)
- Groups and working with groups (advantages, merging, ungrouping)
- Converting objects into curves and shaping them (controlling through nodes and segments)
- Boolean operations
- Explaining tools from the interactive blend tool
- Colors and textures
- Palettes (selection and purpose)
- Color models
- 3D effects
- Transparency
- Working with text (artistic and paragraph, their properties and application)
- Converting text into curves and changing the shape
- Collaboration with other programs
- Explaining the basic image formats (jpg, tif, psd, bitmap), and their characteristics (resolution, transparency, alpha channels, color, layers), and the correct choice of the output format depending on its further use
- Scanning and selecting resolution
- Printing and handling the printer (choosing the size and properties of the output document)

Seminar papers are a specific form of independent student work with the task of creating a graphic work using the specified graphic processing software tools. Seminar papers also practice methods and techniques of independent research and the use of academic sources, expanding knowledge in the field of computer graphics through practical application.

STUDENT WORK EVALUATION

No.	Type of evaluation	partial/ final	elective / mandatory	percentage of participation

01	Participation in contact work - interaction in lectures	Pre-exam obligation or requirement	Mandatory	5%
02	Activity in exercises/laboratory work	Pre-exam obligation or requirement	Mandatory	5 %
03	Student's professional seminar paper	Pre-exam obligation or requirement	Optional	10 %
04	Examination activities - Defense of a practical problem task	Final	Mandatory	80%

LITERATURE / SOURCES (listed in order of relevance)

Author (Last Name, First Name)	Publication title	Publisher's headquarters	Publisher	Edition year	Type of publication*
a/ Basic literature					
Smailović N.	Computer Presentation Graphics in Business Communication	Banja Luka	Pan-European University "APEIRON"	2007	Book
Scott Kelby	Adobe Photoshop CC Book for Digital Photographers	Belgrade	Kompjuter biblioteka	2017	Book
b/ Supplementary literature					
c/ Other sources – journals					
Author - Surname, First name (if the source is an article)	Journal title	Publisher's headquarters	Publisher	Edition year	Type of journal*
c/ Other sources – Internet (WEB) sources					
Site name	Site address	Title of work/hyperlink		Read	
(*)Type of publication (book, script, compendium, multimedia)					