



University of Zagreb
Faculty of Graphic Arts



University of Zagreb Faculty of Graphic Arts

Information package

Undergraduate university study programme *Multimedia and Visual Communications*

Getaldićeva ulica 2
10 000 Zagreb, Republika Hrvatska
T + 385 1 2371 080
E ured.dekana@grf.unizg.hr
W www.grf.unizg.hr

BASIC INFORMATION ABOUT THE STUDY PROGRAM

Name, address, and OIB of the higher education institution:

University of Zagreb Faculty of Graphic Arts, Getaldićeva 2, Zagreb, OIB: 25564990903

Name and type of study: Undergraduate university study programme *Multimedia and Visual Communications*

HKO/EQF/QF-EHEA level: HKO - Level 6. sv / EQF – Level 6 / First cycle

Scientific or artistic field of study:

Area: 2. Technical Sciences, Field: 2.06. Graphic Technology (according to the Regulation on Scientific and Interdisciplinary Fields, Areas, and Branches, as well as Artistic Fields, Areas, and Branches)

According to ISCED FoET classification: 071 – Engineering and engineering trades

Duration of study: 6 semesters (3 years)

Number of ECTS credits earned upon completion of the study: 180

Academic or professional title, i.e., academic degree:

University Bachelor (baccalaureus/baccalaurea) Engineer in Multimedia and Visual Communications

Language of instruction: Croatian

Place of instruction: Zagreb

Mode of instruction: classical

Enrollment quota: 115 full-time students

Academic year in which the study begins: 2025/2026.

ADMISSION REQUIREMENTS, CONDITIONS FOR ENROLLMENT IN THE NEXT SEMESTER, TRIMESTER, OR ACADEMIC YEAR, AND REQUIREMENTS FOR OTHER STUDY OBLIGATIONS

The enrollment conditions are regulated by the [Study Regulations](#). Enrollment in the undergraduate university program and the graduate university program at the Faculty of Graphic Arts, University of Zagreb, is based on a [public competition](#) announced by the Senate.

The content of the competition for enrollment in the undergraduate and graduate university programs at the Faculty of Graphic Arts, University of Zagreb, is prescribed by the University Statute.

The competition for enrollment in the undergraduate university program at the Faculty of Graphic Arts, University of Zagreb, is published on the Faculty's website, as well as in the special section of the public competition by the Senate mentioned in paragraph 1 of this article on the University's website.

Eligibility to apply for the competition for enrollment in the undergraduate university program at the Faculty of Graphic Arts, University of Zagreb, is granted to:

- A candidate who has completed or will complete by the application deadline for the entrance exam at least a four-year secondary education program and passed the state graduation exam.
- A candidate without a state graduation exam, if they completed an appropriate four-year secondary education program in the Republic of Croatia before 2010.
- A candidate who completed equivalent education abroad with a total duration of 12 years, or an equivalent of level 4.2 of the Croatian Qualifications Framework, in accordance with the admission conditions and criteria established by the competition.

Selection of candidates for admission to the undergraduate and graduate university programs at the Faculty of Graphic Arts, University of Zagreb, is conducted through an entrance exam.

The ranking lists of applicants for admission to the study program are compiled based on the following scoring system:

- a) Based on success in high school – up to 300 points
- b) Based on state graduation exam results:
 - Croatian language (B level) – up to 100 points
 - Mathematics (B level, minimum 45.00%) – up to 300 points
 - Foreign language (B level) – up to 100 points
 - Visual Arts or Informatics* – up to 100 points

*The candidate is not required to pass either of these subjects. By passing one or both, additional points are earned. The best result will be valued at 100 points, and the second at 50 points.

c) Based on additional assessment of special abilities:

➤ Written motivation for the study (Motivation letter) ** – up to 100 points

d) Based on competition results:

➤ First, second, or third place in national or international competitions in:

Discipline	Evaluation
Graphic technology and design	1000 points - direct enrollment
Informatikcs	1000 points - direct enrollment
Fine arts	1000 points - direct enrollment
Matematics	1000 points - direct enrollment
Multimeda	1000 points - direct enrollment
EGMO (European Girls Mathematical Olimpiad)	1000 points - direct enrollment
(CMC) Cyberspace Mathematical Competition	1000 points - direct enrollment
(RMM) Romanian Master of Mathematics	1000 points - direct enrollment

➤ Placement in a national competition in Graphic Technology and Design, Informatics, Visual Arts, Mathematics, or Multimedia – 50 points

e) Based on additional student achievements:

➤ Passed a second elective subject in the state graduation exam (apart from Visual Arts and Informatics) – up to 50 points

f) Athlete category:

➤ Talented, top-level, and elite athletes (Croatian athletes categorized from I to VI according to the Categorization Rules of the Croatian Olympic Committee)

From	To	Evaluation
------	----	------------

I	IV	100
V	VI	50

Applications for admission to the study program 1 are submitted online through NISpVU – the National Information System for Applications to Higher Education Institutions:

www.postani-student.hr

ENROLLMENT IN THE NEXT STUDY YEAR

By enrolling in the academic year, the student regulates their status. A student acquires the right to enroll in the next study year after fulfilling the study obligations expressed in ECTS credits, in accordance with the general regulations of the Faculty. Study obligations are enrolled semester-wise (or for the entire year if provided by the study plan and program). A student can only enroll in courses for which they have met the prerequisites according to the study program and the study execution plan. A student who has not completed all study obligations in the previous academic year, upon enrolling in the new academic year, enrolls in the study obligations they did not complete in the previous year, as well as new obligations from the next study year if the conditions for enrolling in courses have been met.

HORIZONTAL MOBILITY

Based on Article 16 of the Regulations on Studying at the University Undergraduate and University Graduate Study Programs of the University of Zagreb, Faculty of Graphic Arts, a specific procedure has been established for implementing horizontal mobility.

OUTGOING HORIZONTAL MOBILITY

Upon submission of a request to the Office for Students and Studies, a student may be granted approval to attend and take examinations in courses at another higher education institution within the University of Zagreb (horizontal mobility). Along with the request, the student is required to submit a confirmation of approval for attending and taking the course at the other institution. The [request](#) and/or confirmation must include the following details: course title, ECTS credits, course instructor, number of hours per type of instruction, and the course title in English. The course for which the student has been approved to attend and take exams at another higher education institution within the University of Zagreb is recorded in the Faculty of Graphic Arts' information system. The completed exam is officially recognized upon submission of an authenticated transcript of records from the other institution or an official certificate confirming the passed exam.

ECTS credits earned in this manner are recognized as if they were obtained within the

student's home study program and are recorded in the diploma supplement. The credit value of the course corresponds to the value assigned to it in the study program in which it is conducted.

INCOMING HORIZONTAL MOBILITY

A student from another higher education institution within the University of Zagreb may, upon submission of a request to the Office for Students and Studies of the Faculty of Graphic Arts, and with the consent of the course instructor, be granted approval to attend and take examinations in university undergraduate or university graduate study courses at the Faculty of Graphic Arts, University of Zagreb. The Office for Students and Studies will issue documentation confirming the course title and determining its credit value (number of ECTS credits).

VERTICAL MOBILITY

Based on an analysis of the comparability of the Undergraduate university study programme *Multimedia and Visual Communications* with programs of accredited higher education institutions in the Republic of Croatia and the European Union, significant opportunities for establishing vertical mobility for students of the Faculty of Graphic Arts can be identified.

The expected learning outcomes of the study program fully align with the requirements of Level 6. sv of the CROQF and level 6 of EQF, ensuring the recognition of acquired competencies in a broader European context. The program encompasses theoretical knowledge, practical and technical skills, as well as professional and entrepreneurial competencies, providing a foundation for further academic and professional advancement. Vertical mobility within the Faculty of Graphic Arts enables students to transition from undergraduate to graduate study, as well as from graduate to doctoral levels. Students who complete the undergraduate university study programme *Multimedia and Visual Communications* can continue their education at the graduate level, where their acquired competencies are further enhanced through specialized courses and research work. Upon approval of the new Undergraduate university study programme *Multimedia and Visual Communications*, the Faculty of Graphic Arts, University of Zagreb, will initiate the initial accreditation process for the new graduate university study programme *Multimedia and Visual Communications*. This will allow students to continue their education, deepen their expertise, and develop competencies in the field of graphic technology, ensuring continuity of education and adaptation to contemporary labor market demands.

After completing the graduate program, students have the opportunity to enroll in doctoral studies, where they focus on scientific research in the creative industries. Vertical mobility enables seamless academic progression, while the program structure ensures that students, at each level of education, acquire deeper theoretical insights, develop research skills, and enhance their professional competencies in the field of graphic technology and design.

Vertical mobility of students within the proposed Undergraduate university study

programme *Multimedia and Visual Communications* is enabled through comparability with various undergraduate and graduate studies in Croatia and the European Union. Students who complete this program can continue their education at related university graduate studies covering the areas of graphic design, visual communications, multimedia and digital media. Given the technical and interdisciplinary nature of the program, students have the opportunity to enroll in graduate studies dealing with advanced technologies in the graphic industry, UX/UI design, creative industries. The proposed university undergraduate study program *Multimedia and Visual Communications* enables a high level of vertical mobility of students due to its compatibility with other related studies in Croatia.

Students who complete this program will have the opportunity to continue their education in graduate studies in the field of multimedia, visual communications, graphic design and media production. The comparability of the curriculum with other programs in Croatia shows that students will have a wide range of opportunities for further academic and professional specialization, whether in technically oriented studies, artistic programs or interdisciplinary studies that combine design and digital technologies. The proposed Undergraduate university study programme *Multimedia and Visual Communications* integrates contemporary trends in multimedia and visual communications, which ensures its competitiveness and allows students to adapt more easily to different academic and professional environments.

COMPLETION OF STUDIES

The undergraduate university program at the University of Zagreb Faculty of Graphic Arts, is completed by passing all exams, fulfilling other study obligations, and completing and defending the final thesis.

The Rules on the Final and Graduate Thesis of the University of Zagreb Faculty of Graphic Arts, will further regulate all matters related to the final or graduate thesis, such as the topic submission, the creation and formatting of the final or graduate thesis, evaluation of the final or graduate thesis, the defense procedure, rules on dealing with copyrighted works, and rules regarding the handling of industrial property rights and their utilization. The Rules on the Final and Graduate Thesis will be publicly available on the Faculty's website.

The Faculty is obliged to make the student's final/graduate thesis publicly available through an appropriate public online database of the Faculty's library and the public database of final/graduate theses of the National and University Library.

PROPOSED STRUCTURE OF THE NEW UNDERGRADUATE UNIVERSITY STUDY PROGRAMME MULTIMEDIA AND VISUAL COMMUNICATIONS

The structure of the undergraduate university study programme *Multimedia and Visual Communications*, as shown in Table 1, includes the following: study year and semester, course name and status, course holder, forms of teaching, and ECTS credits.

The proposed study program consists of compulsory and optional courses. Compulsory courses ensure the achievement of key learning outcomes necessary for successful

completion of studies. In addition to them, the student has the opportunity to choose a certain number of ECTS credits from the offer of elective courses, which allows him to adapt the program to his interests and goals. In the first semester, students enroll in a compulsory 30 ECTS credits. In the second semester, students enroll in 26 compulsory ECTS credits, while they enroll in the remaining 4 ECTS credits from the group of elective courses. In the 3rd semester, students enroll 24 compulsory ECTS credits, while they enroll the remaining 6 ECTS credits from the group of elective courses. In 4th semester, the student enrolls in 24 ECTS compulsory courses, while the remaining 6 ECTS are enrolled as elective courses. In the 5th semester, students enroll in 24 ECTS compulsory courses, while the remaining 6 ECTS are chosen as elective courses. In the 6th semester, students enroll in 25 compulsory ECTS credits, while the remaining 5 ECTS are enrolled as elective courses. A student in full-time status studies within the framework of full teaching hours. A student enrolled in regular status usually enrolls 60 points according to ECTS in the academic year in accordance with the study plan.

Table 1. The proposed structure of the undergraduate study program

LIST OF COURSES						
Study year: 1.						
Semester: 1.						
COURSE	TEACHER	E	E	S	ECTS	STATUS ¹
Mathematics 1	Ivan Budimir	2	2	0	5	C
Introduction to graphic technology	Suzana Pasanec Preprotić, Igor Zjakić, Maja Strgar Kurečić	2	0	0	3	C
Engineering graphics	Dubravko Banić	1	1	1	4	C
Digital multimedia	Klaudio Pap, Maja Rudolf	2	2	0	4	C
Presentation of information	Nikola Mrvac, Martina Hajdek	2	0	2	4	C
Introduction to laboratory work	Željka Barbarić-Mikočević, Ivana Plazonić	1	1	0	2	C
Sound and light	Katarina Itrić Ivanda	1	0	2	3	C
Structures of visual media	Vanda Jurković	1	0	1	2	C
Creating visual media	Vanda Jurković	1	2	0	2	C
Physical education and health I	Katarina Knjaz	0	2	0	1	C

LIST OF COURSES						
Study year: 1.						
Semester: 2.						
COURSE	TEACHER	L	E	S	ECTS	STATUS
Mathematics 2	Ivan Budimir	2	2	0	5	C

¹ **NOTE** compulsory - C, upisuje se O, elective - E

Technical representation systems	Dubravko Banić	2	1	0	4	C
Fundamentals of computing and programming	Tibor Skala, Marko Maričević	2	2	0	5	C
Structuring of print media	Nikola Mrvac	2	2	0	4	C
Basic graphic materials	Branka Lozo, Sonja Jamnicki Hanzer, Maja Stržić Jakovljević	2	1	0	4	C
Art in visual media	Vanda Jurković	1	0	1	3	C
Physical education and health II	Katarina Knjaz	0	2	0	1	C
LIST OF ELECTIVE COURSES OF THE SECOND SEMESTER						
Analysis of visual style	Vanda Jurković	1	2	0	2	E
English in multimedia and visual communications	Ana Nemec	1	0	2	2	E
German in multimedia and visual communications	Ana Nemec	1	0	2	2	E

LIST OF COURSES						
Study year: 2.						
Semester: 3.						
COURSE	TEACHER	L	E	S	ECTS	STATUS
Probability and statistics	Ivan Budimir	2	1	0	4	C
Communication science	Daria Mustić	2	1	0	3	C
Graphic composition for digital media	Nikolina Stanić Loknar, Tajana Koren Ivančević	2	2	0	4	C
Fundamentals of 3D modeling	Lidija Mandić	2	2	0	4	C
User interfaces	Vladimir Cviljušac	2	2	0	4	C
Integration of digital content for printing plate making	Sanja Mahović Poljaček, Tomislav Cigula, Tamara Tomašegović	2	1	1	4	C
Physical education and health III	Katarina Knjaz	0	2	0	1	C
LIST OF ELECTIVE COURSES OF THE THIRD SEMESTER						
Original graphics	Josip Jozić	1	2	0	3	E
Infographic design	Dorotea Kovačević	1	0	1	3	E
Structure of visual message	Maja Brozović	2	1	0	3	E
Creative programming for interactive media	Tibor Skala	2	2	0	4	E
Codes in packaging	Denis Jurečić	1	2	0	3	E

LIST OF COURSES						
Study year: 2.						
Semester: 4.						
COURSE	TEACHER	L	E	S	ECTS	STATUS
Typography	Ivana Žiljak Stanimirović	2	2	0	4	C
Web design	Jesenska Pibernik	2	2	0	4	C
Interactive technologies	Nikola Mrvac	2	2	0	4	C
Print design solutions	Krešimir Dragčević, Igor Zjakić	2	2	0	3	C
Interactive Web programming	Klaudio Pap	2	2	0	4	C
Fundamentals of photography	Miroslav Mikota	2	1	1	4	C
Physical education and health IV	Katarina Knjaz	0	2	0	1	C
LIST OF ELECTIVE COURSES OF THE FOURTH SEMESTER						
Color management	Lidija Mandić	2	0	1	3	E
Packaging design	Ivana Žiljak Stanimirović	2	2	0	4	E
Introduction to virtual reality	Lidija Mandić	1	2	0	3	E
Experimental and analogue photography	Rahela Kulčar	1	1	1	3	E
Visual and media communication	Daria Mustić	2	0	1	3	E
Information visualization	Maja Rudolf	1	2	0	3	E
LIST OF COURSES						
Study year: 3.						
Semester: 5.						
COURSE	TEACHER	L	E	S	ECTS	STATUS
Graphic programming languages	Klaudio Pap	2	1	0	3	C
Basics of marketing	Zoran Najdanović	2	0	1	3	C
Sustainability in multimedia	Ivana Bolanča Mirković	2	0	1	3	C
Digital illustration elements	Dorotea Kovačević	1	2	0	3	C
Digital photography	Maja Strgar Kurečić	2	1	0	3	C
Color theory and application in visual communication	Rahela Kulčar	2	1	0	3	C
Applied and media photography	Miroslav Mikota	2	1	1	3	C
Quality analysis of multimedia content	Diana Milčić, Tomislav Cigula	2	0	1	3	C
LIST OF ELECTIVE COURSES OF THE FIFTH SEMESTER						

Design of paperboard products	Josip Bota	1	2	0	3	E
Management of multimedia production	Diana Bratić	2	0	1	3	E
Web animations	Tajana Koren Ivančević	2	2	0	3	E
Game development and design	Tibor Skala, Marko Maričević	2	2	0	4	E
Digital image processing	Vladimir Cviljušac	1	2	0	3	E
Physical education and health V	Katarina Knjaz	0	2	0	1	E
Fundamentals of entrepreneurship	Zoran Najdanović	2	0	1	3	E

LIST OF COURSES						
Study year: 3.						
Semester: 6.						
COURSE	TEACHER	L	E	S	ECTS	STATUS
Intellectual property	Petar Mišević	2	0	1	3	C
Additive manufacturing techniques	Marko Maričević	2	1	0	3	C
Digital publishing	Maja Rudolf, Diana Bratić	2	2	0	3	C
Visual identity	Maja Brozović	2	2	0	3	C
Principles of ecodesign	Dorotea Kovačević, Marina Vukoje Bezjak	1	0	2	3	C
User experience testing	Filip Cvitić	2	2	0	3	C
Visual psychophysics	Mile Matijević	2	0	1	3	C
Final project		0	2	0	2	C
Professional practice		0	2	0	2	C
LIST OF ELECTIVE COURSES OF THE SIXTH SEMESTER						
Project planning in graphic technology	Diana Milčić, Tomislav Cigula	1	0	2	3	E
Sensors in interactive systems	Katarina Itrić Ivanda	2	0	1	3	E
Typography in multimedia	Tajan Koren Ivančević, Nikolina Stanić Loknar	2	2	0	4	E
Multimedia content management	Tajan Koren Ivančević	2	2	0	4	E
Photography in multimedia	Miroslav Mikota	2	1	1	4	E
Product presentation	Josip Bota	1	2	0	3	E

COMPETENCES ACQUIRED BY COMPLETION OF STUDIES

A University Bachelor (baccalaureus/baccalaurea) Engineer in Multimedia and Visual Communications is a highly educated specialist who participates in the design and

programming of multimedia content and in the creation of visual solutions for various media, where creative and functional visual solutions are developed through the creative use of colors, typography and images. They are trained to cooperate in multidisciplinary teams and actively communicate with clients, designers and developers. In addition, they develop the ability to participate in projects in the field of multimedia and visual communications. The introduction and development of a new qualification enables the education of engineers who are ready to take on the challenges of modern technologies and responds to the needs of the modern labor market. Multimedia and Visual Communication Engineers will possess a wide range of knowledge and skills, including: technical knowledge and skills, programming, design and aesthetics, typography, color theory and composition to be able to create visually appealing and functional content, and teamwork and communication skills with clients, which is crucial for the successful implementation of projects.

Table 2. Learning outcomes at the program level.

Learning outcomes of the study program	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12	LO 13	LO 14	LO 15	LO 16	LO 17	LO 18	LO 19	LO 20
Total number of courses for a specific learning outcome	12	12	7	8	9	20	8	12	12	7	17	7	7	11	7	12	8	11	17	6
Mathematics 1				+	+															
Introduction to graphic technology	+	+								+			+						+	
Engineering graphics	+	+				+		+												
Digital multimedia					+			+						+						
Presentation of information	+					+		+	+		+			+	+		+	+	+	+
Introduction to laboratory work				+									+					+		
Sound and light		+		+	+														+	
Structures of visual media	+								+											
Creating visual media	+								+											
Mathematics 2				+	+															
Technical representation systems				+		+					+									
Fundamentals of computing and programming		+						+						+						
Structuring of print media		+					+		+	+	+	+	+	+			+	+	+	
Basic graphic materials		+		+						+		+	+							
Art in visual media	+								+											
Probability and statistics				+	+				+											
Communication science																+	+	+	+	+
Graphic composition for digital media										+	+				+	+			+	+

Integration of digital content for printing plate making		+	+							+			+	+				+		
User interfaces						+		+			+			+					+	+
Fundamentals of 3D modeling				+		+					+			+						
Typography	+	+	+			+														
Interactive technologies	+					+		+	+			+		+		+				+
Print design solutions		+								+		+	+		+	+				
Interactive Web programming																				
Fundamentals of photography	+		+			+	+	+	+		+				+	+		+		+
Web design						+	+	+	+		+							+	+	
Graphic programming languages						+	+	+	+					+						
Basics of marketing																+	+			
Sustainability in multimedia			+			+						+				+			+	
Digital illustration elements						+					+			+		+			+	
Digital photography		+				+					+							+	+	
Color theory and application in visual communication	+	+			+	+					+	+				+		+		
Applied and media photography	+					+		+			+				+	+				
Quality analysis of multimedia content			+			+	+							+						
Intellectual property															+	+	+			
Additive manufacturing techniques		+	+			+	+	+		+	+		+					+	+	
Digital publishing						+	+	+	+		+						+			
Visual identity						+					+						+	+	+	
Priniples of ecodesign			+								+	+			+	+			+	
User experience testing					+		+		+								+		+	

Visual psychophysics	+				+	+					+							+	
----------------------	---	--	--	--	---	---	--	--	--	--	---	--	--	--	--	--	--	---	--

Learning outcomes – legend

Learning outcome label	Description of learning outcomes
LO 1	Identify the theoretical and historical foundations of visual communications and their application in business practice.
LO 2	Explain the basic principles of graphic technology and its applications in the industry.
LO 3	Identify the advantages and disadvantages of graphic materials in relation to the media platform.
LO 4	Apply mathematical methods and fundamental principles of technical sciences to solve engineering problems.
LO 5	Use statistical methods to analyse data in research and development.
LO 6	Independently execute simple projects in visual communications and multimedia content.
LO 7	Plan the production and distribution of media content.
LO 8	Develop simple interactive multimedia projects using appropriate software tools and techniques.
LO 9	Design accessible, inclusive, and usable user experiences.
LO 10	Differentiate and select printing techniques and printing forms for various graphic products.
LO 11	Apply design processes, principles, and appropriate tools to create visual solutions.
LO 12	Apply guidelines for ecological sustainability from the conceptual solution to the realization of final visual and multimedia systems.
LO 13	Analyse basic graphic materials.
LO 14	Integrate simple multimedia elements into coherent products for different platforms.
LO 15	Apply socially responsible and ethically proactive behaviour in professional work.
LO 16	Promote the profession's position in social, cultural/artistic, environmental, economic, and ethical contexts.
LO 17	Apply basic entrepreneurial skills and management strategies necessary for running one's own business.
LO 18	Effectively collaborate in teams and develop interpersonal skills.

LO 19	Present professional information clearly and effectively to various target groups.
LO 20	Identify personal needs for continuous learning using appropriate resources.

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Dubravko Banić, PhD	
Course title	Engineering graphics	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	I.	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	1+1+1

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The aim of the course is to equip students with the skills to apply technical standards and methods of representation in technical drawing, with a focus on orthogonal projections and various types of axonometric projections. Students will master basic technical concepts and rules necessary for accurately representing objects through sections, detail drawings, and dimensioning. By analyzing simple and complex shapes, students will develop the ability to visualize symmetry, dimensioning, and view simplification. By the end of the course, they will be able to produce technical drawings that meet professional standards and the requirements of technical documentation.</i>
1.2. <i>Enrollment conditions</i>
<i>No enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
1. <i>Analyze technical drawings/sketches.</i> 2. <i>Apply technical standards and basic concepts in technical representation.</i> 3. <i>Perform accurate dimensioning on technical drawings in accordance with standards.</i> 4. <i>Apply the fundamental rules of orthogonal projection for simple shapes.</i> 5. <i>Utilize axonometric projections, including isometric, dimetric, and oblique projections.</i>
1.4. <i>Course content</i>
1. <i>Standards, scales, and basic technical concepts required for technical representation.</i> 2. <i>Defining and visualizing the symmetry of various shapes.</i> 3. <i>Representing objects through sections.</i> 4. <i>Simplified views and detailed drawing.</i> 5. <i>Dimensioning.</i> 6. <i>Basic rules of orthogonal projection.</i>

7. *Orthogonal projection of simple shapes.*
8. *Orthogonal projection of complex shapes.*
9. *Introduction to axonometry.*
10. *Isometry.*
11. *Dimetry.*
12. *Oblique projection.*

1.5. Types of Teaching Methods

- x Lectures
- x Seminars and workshops
- x Exercises
- x Online education
- ☐ Fieldwork

x Independent tasks

☐ Multimedia and network

☐ Laboratory

☐ Mentorship

☐ Other

1.6. Student obligations

Successfully completed exercises: 90%

Accepted project assignments and seminar attendance: 90%

Class attendance: 70%

1.7. Student work monitoring

Attendance	x	Activity in classes	x	Seminar paper		Experimental work	
Written exam	x	Oral exam		Essay		Research	
Project	x	Continuous knowledge assessment	x	Report		Practical work	
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Evaluation:

Exercise tasks: 10%

Project assignments in seminars: 25%

Class attendance: 5%

Midterm exam 1: 30%

Midterm exam 2: 30%

Or final written exam at the end of the semester: 60%

Assessment:

1. *Analyze technical drawings/sketches.*
2. *During exercises, students will apply technical standards and basic concepts in technical representation.*
3. *In exercises and project assignments during seminars, students will perform accurate dimensioning on technical drawings according to standards.*

4. In exercises and project assignments during seminars, students will apply basic rules of orthogonal projection for simple shapes.		
5. In the written exam and/or midterm, students will apply knowledge of axonometric projection, including isometric, dimetric, and oblique projections.		
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Tehcnical drawing / Milan Opalić, Milan Kljajin, Slavko Sebastijanović. Čakovec : Zrinski, 2003.</i>	10	
<i>Technical Drawing in Images with Computer Applications / Ćiril Koludrović, Irena Koludrović-Harbić, Rudolf Koludrović. Rijeka : Autorska naklada Koludrović Ć.I.R., 1994.</i>	10	
<i>Technical Drawing: A Handbook for the Metalworking Profession / Branko Kovač. Zagreb : Školska knjiga,, 1970.</i>	2	
1.10. Supplementary literature		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Dubravko Banić, PhD	
Course title	Technical Representation Systems	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	I.	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+1+0

COURSE DESCRIPTION
1.1. Course objectives
<i>The course aims to equip students with the skills to independently use technical methods and tools for representation, visualization, and documentation of technical information. Throughout the course, students will develop essential skills for accurate design and three-dimensional drawing, with a focus on computer</i>

<i>graphics. This knowledge will enable them to apply these abilities in various stages of graphic production and multimedia design, allowing them to effectively communicate technical specifications and create visualizations tailored to the demands of graphic technology.</i>		
1.2. Enrollment conditions		
No enrollment conditions		
1.3. Expected learning outcomes		
1. Apply basic methods of technical representation for precise visualization and documentation of technical information. 2. Utilize computer tools for three-dimensional drawing of shapes in accordance with industry standards. 3. Design technical elements and shapes in three-dimensional space, focusing on applications in graphic production and multimedia design. 4. Analyze technical specifications to produce accurate and functional three-dimensional visualizations. 5. Adapt three-dimensional drawings to various stages of graphic production. 6. Communicate technical concepts and solutions through technical documentation and visualizations.		
1.4. Course content		
13. Fundamentals of Technical Representation 14. Methods of Representation and Their Applications in Industry 15. Techniques for Visualizing Technical Information 16. Methods for Accurate Visualization and Documentation of Technical Data 17. Computer Tools for Three-Dimensional Drawing 18. Designing Technical Elements 19. Basics of Shape Design in Three-Dimensional Space 20. Aligning Three-Dimensional Drawings with Industry Standards 21. Analyzing Technical Specifications for Creating Accurate Visualizations 22. Adapting Drawings for Graphic Production 23. Methods for Adjusting Three-Dimensional Drawings to Different Stages of Production 24. Creating Technical Documentation and Visualizations for Communicating Concepts		
1.5. Types of Teaching Methods	x Lectures ☐ Seminars and workshops x Exercises x Online education ☐ Fieldwork	x Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_
1.6. Student obligations		
Mandatory attendance for lectures and exercises. Students complete exercises independently each week, with a review of each student's final solutions recorded through the e-learning system. Requirement for exam eligibility: a minimum attendance of 40% for lectures and 100% completion of exercises.		
1.7. Student work monitoring		

Attendance	x	Activity in classes	x	Seminar paper		Experimental work	
Written exam	x	Oral exam		Essay		Research	
Project	x	Continuous knowledge assessment	x	Report		Practical work	
Portfolio		Class attendance	x				

1.8. Assessment and evaluation of student work during classes and at the final exam.

Evaluation:

Exercise tasks: 40%

Project assignment: 20%

Class attendance: 10%

Continuous knowledge assessment: 30%

If a student has not participated in the continuous knowledge assessment, they will take a written exam worth 30%.

Assessment:

- 1. In the exercises, students will apply basic methods of technical representation for accurate visualization and documentation of technical information.*
- 2. In the exercises and project assignments, students will use computer tools for three-dimensional drawing of shapes in line with industry standards.*
- 3. In the exercises and project assignments, students will design technical elements and shapes in three-dimensional space, focusing on applications in graphic production and multimedia design.*
- 4. In the exercises, students will analyze technical specifications to create precise and functional three-dimensional visualizations.*
- 5. Through continuous assessment or in a written exam, students will adapt three-dimensional drawings to different stages of graphic production.*
- 6. Through continuous assessment or in a written exam, students will communicate technical concepts and solutions using technical documentation and visualizations.*

1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Kouznetsova, Anja: 3D printing failures: how to diagnose and repair all desktop 3D printing issues</i>	<i>1</i>	
<i>Jordan, John: 3D printing</i>	<i>1</i>	
<i>Ben Redwood, Filemon Schoeffer, Brian Garret: The 3D printing handbook: technologies, design and</i>	<i>1</i>	
<i>Liza Wallach Kloski and Nick Kloski: Getting started with 3D printing: a hands-on guide to the hardware, software, and</i>	<i>1</i>	

<i>services behind the new manufacturing revolution</i>		
<i>Samuel N Bernier, Bertier Luyt, Tatiana Reinhard: Design for 3D printing: scanning, creating, editing, remixing and making in three dimensions</i>	1	
<i>1.10. Supplementary literature</i>		
<i>1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
<i>Student survey</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Željka Barbarić-Mikočević, PhD Assoc. prof. Ivana Plazonić, PhD	
Course title	Introduction to laboratory work	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	<i>I.</i>	
ECTS credit and teaching method	ECTS credits	2
	Number of hours (L+E+S)	1+1+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>List and describe laboratory ware and laboratory equipment made of different materials and explain the purpose of their use in the laboratory. Apply procedures for washing and drying laboratory ware before use. Measure the mass of a given sample on an analytical balance. Measure the volume of the given solution using measuring laboratory ware. Connect physical quantities with the corresponding units of measurement. Calculate the mass fraction of moisture of the given sample after the implementation of the laboratory procedure. Calculate the required mass of a solid substance or the volume of a concentrated solution for the preparation of a diluted solution of a defined volume and concentration. Use an areometer to measure the density of solutions. Use a pH meter and indicators to measure the pH value of the solution. List the types of chemical reactions. Present the chemical reaction of neutralization by volumetric process.</i>
1.2. <i>Enrollment conditions</i>
-
1.3. <i>Expected learning outcomes</i>
<i>1. Explain laboratory rules when using laboratory ware, chemicals and measuring instruments.</i>

2. Choose appropriate laboratory ware for a particular application.
3. Make solutions of defined concentration.
4. Interpret the chemical reactions of neutralization and hydrolysis with appropriate chemical equations.

1.4. Course content

1. Rules and safety measures for working in the laboratory. Chemical nomenclature. Chemicals.
2. Laboratory ware and measuring instruments.
3. Physical quantities and units.
4. Weighing, drying of sample and sample ignition. Substances. Mass fraction.
5. Solutions. Quantitative composition of solutions. Amount of substance and equivalence.
6. Preparation of solutions required for technological processes. Solution dilution.
7. Density of solutions.
8. pH value of solutions.
9. Chemical reactions of neutralization. Acid and alkali strength. Hydrolysis reactions.
10. Equations of chemical reactions.

1.5. Types of Teaching Methods

- | | |
|---|---|
| ☒ Lectures | ☐ Independent tasks |
| ☐ Seminars and workshops | ☐ Multimedia and network |
| ☒ Exercises | ☐ Laboratory |
| ☐ Online education | ☐ Mentorship |
| ☐ Fieldwork | ☐ Other_ |

1.6. Student obligations

Compulsory attendance of laboratory exercises.

1.7. Student work monitoring

Attendance	x	Activity in classes		Seminar paper		Experimental work	
Written exam	x	Oral exam		Essay		Research	
Project		Continuous knowledge assessment	x	Report		Practical work	x
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Assessment:

Students' work during classes is evaluated by continuous knowledge assessment through 5 short colloquiums. Students who do not pass the continuous knowledge colloquiums have the opportunity to take the final written exam within the official exam deadlines. Students who are not satisfied with the grade of the written exam can take the oral exam.

Evaluation:

1. In written form at the colloquium/written exam, students will explain the rules of work in the laboratory.
2. In the laboratory exercises, students will distinguish measured from non-measured laboratory dishes.
3. As part of the laboratory exercises, students will calculate the mass of the substance in the solid aggregate state / the volume of the substance in the liquid aggregate state for the preparation of solutions of the desired concentration.

4. During the colloquium/written exam and/or laboratory exercises, students will write the equation of neutralization and hydrolysis from given reactants.		
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Sikirica, Milan: Stehiometrija, Zagreb: Školska knjiga, 1995.</i>	13	100
<i>Ivan Filipović, Stjepan Lipanović: Opća i anorganska kemija: 1. dio, Zagreb: Školska knjiga, 1991.</i>	16	100
1.10. Supplementary literature		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form, etc..		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Ivana Bolanča Mirković, PhD	
Course title	Sustainability in multimedia	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+0+1

COURSE DESCRIPTION
1.1. Course objectives
<i>The course examines the ecological, social and economic aspects of sustainable practices in the media industry. Students will study the impact of media production on the environment and will learn about sustainable technologies and materials. The focus will also be on the integration of environmentally responsible practices in the field of visual communications. Under mentoring, students will research the impact of design on the environment and learn about sustainable materials and technologies. Through case study analysis and practical projects, they will develop skills to implement sustainable solutions in visual communications. The course also covers ethical issues, global trends and regulations related to sustainability, preparing students for responsible and innovative work in the profession.</i>
1.2. Enrollment conditions

1.3. Expected learning outcomes								
1. Analyze sustainable practices in the media and visual industry. 2. Identify environmentally friendly technologies and materials used in visual communications. 3. To conclude on issues related to sustainability in the media. 4. Demonstrate the implementation of sustainable practices in visual communication projects. 5. Create media content using sustainable methods and materials. 6. Present your projects and research clearly and convincingly, using appropriate visual and verbal tools								
1.4. Course content								
• Introduction to sustainability - ecological and social dimensions of sustainability. • Anthropogenic impacts of multimedia on environmental devastation, health and safety risks. • Assessment of sustainable practices • Sustainability of media • Digitization of content • Renewable energy sources, optimization of production processes and sustainable distribution • Sustainability of visual communications and environmentally friendly design • Use of digital platforms • Education and awareness of sustainability • Optimization and use of sustainable resources								
1.5. Types of Teaching Methods				x Lectures x Seminars and workshops ☐ Exercises X Online education ☐ Fieldwork	x ☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other			
1.6. Student obligations								
Kontinuirano sudjelovanje studenta u nastavi kroz semestar kroz aktivnost na predavanjima i seminarima te pisanje zadaća. Student je obavezan izraditi sve projektni zadatak te predati seminarski rad u kojem se ocjenjuje točnosti, kvalitete analize relevantnih čimbenika i originalnost. Potrebna je prolazna ocjena iz pismenog ispita ili oba kolokvija								
1.7. Student work monitoring								
Attendance		Activity in classes	x	Seminar paper	x	Experimental work		
Written exam	x	Oral exam		Essay		Research		
Project	x	Continuous knowledge assessment	x	Report		Practical work		
Portfolio								
1.8. Assessment and evaluation of student work during classes and at the final exam.								
Evaluation: Active participation in discussions at the lecture - 5% Making homework - 5%								

Creation of project and seminar - (Evaluated on the basis of accuracy, quality of analysis of relevant factors and originality) – 20%

Final written exam – 70% or 2 colloquia:

Colloquium I – 35%

Colloquium II – 35%

Evaluation:

1. *Students will analyze sustainable practices in the media and visual industry in written form through assignments and a written exam, and in oral form through active participation in lectures.*
2. *In written form through assignments and a written exam, and in oral form through active participation in lectures, students will identify environmentally friendly technologies and materials used in visual communications.*
3. *In written form through assignments and a written exam, and in oral form through active participation in lectures, students will conclude on issues related to sustainability in the media.*
4. *As part of the project assignment and seminar, the student will demonstrate the implementation of sustainable practices in visual communication projects in written and oral form.*
5. *As part of the project assignment and seminar, the student will create written media content using sustainable methods and materials.*
6. *As part of the project assignment and seminar, the student will present his projects and research clearly and convincingly, using appropriate visual and verbal tools, in written and oral form.*

1.9. *Mandatory literature and number of copies available in relation to the number of students currently attending the course*

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Bendor, R., Interactive media for sustainability, Cham: Springer Nature: Palgrave Macmillan, 2018., ISBN: 9783319703824</i>	1	
<i>Thomas, O., Lohrmann C., Sustainability in a digital world: new opportunities through new technologies, New York: Springer, 2017., ISBN: 9783319546025</i>	1	
<i>Mihelcic, J. R., Zimmerman J. B., Environmental engineering: fundamentals, sustainability, design, 2nd ed, Hoboken: Wiley, 2014., ISBN: 19781118741498</i>	1	
<i>McDonough, W., Braungart, M., The upcycle: beyond sustainability designing for abundance, New York: North Point Press, 2013., ISBN: 9780865477483</i>	1	
<i>Gavin, A., Design thinking for visual communication, 2nd ed., London: Bloomsbury Visual Arts, 2020., ISBN: 9781350106222</i>	1	

1.10. *Supplementary literature*

1.11. Kishita, Y., Mitsutaka Matsumoto, M., Inoue M., Fukushige, S., <i>EcoDesign and sustainability II: social perspectives and sustainability assessment</i> , Singapore: Springer, 2021., ISBN: 9789811567773
1.12. Papanek, V., <i>Design for the real world: Human Ecology and Social Change</i> , 3rd ed., London : Thames and Hudson, 2020., ISBN: 9780500295335
1.13. Wendy Jedlicka, <i>Sustainable Graphic Design: Tools, Systems and Strategies for Innovative Print Design</i> , Wiley, 2009, ISBN-10: 9780470246702
1.14. Brian Dougherty, <i>Celery Design Collaborative, Green Graphic Design</i> , Allworth, 2008
1.1. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>
<i>Student survey, Self-evaluation form</i>

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Asst. prof. Josip Bota, PhD	
Course title	Design of Paperboard Products	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	<i>III.</i>	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	1 + 2 + 0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The course aims to equip students with the fundamental skills needed for designing graphic products made from paperboard and corrugated board (such as packaging, displays, shelves, and other promotional items). By analyzing and studying the specific characteristics of various products, students will develop a basic understanding of how to create and adapt graphic solutions to parametric designs and target audiences. Through project-based assignments, they will learn how to modify graphic designs to cutting layout templates and customize cutting layout templates to the graphic design. Students will also learn to apply design principles, develop 3D visualizations to present multiple solutions, and adapt their designs to the technical constraints of graphic production technologies. Practical assignments will help them acquire the skills needed to create graphic designs for products composed of multiple components.</i>
1.2. <i>Enrollment conditions</i>
-
1.3. <i>Expected learning outcomes</i>

1. *Design a graphic layout for corrugated cardboard and paperboard products.*
2. *Reproduce 3D visualizations of multiple graphic solutions for paperboard products.*
3. *Adapt graphic design to the limitations of graphic technology.*
4. *Apply graphic design to a paperboard product composed of multiple components.*
5. *Adjust the graphic design to the cutting layout template and vice versa.*
6. *Identify designs aimed at visual communication with the target audience.*

1.4. Course content

1. *Packaging in Service of the Product*
2. *Promotional Item in Service of the Product*
3. *Multi-Part Paperboard Products*
4. *Structure, Material, and Design*
5. *Target Audience and Design*
6. *Product and Item Visualizations*
7. *Technical Limitations and Cutting Layout Adjustments*
8. *Synergy with Graphic Design*

1.5. Types of Teaching Methods

- | | |
|--|--|
| ☒ Lectures
☐ Seminars
and workshops
☒ Exercises
☒ Online
education
☐ Fieldwork | ☒ Independent tasks
☐ Multimedia and
network
☐ Laboratory
☐ Mentorship
☒ Other |
|--|--|

1.6. Student obligations

Active participation in classes and online activities
Completion and presentation of a project assignment
Revision and correction of the project assignment according to feedback
Regularly complete weekly practical assignments

1.7. Student work monitoring

Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam	X	Oral exam		Essay		Research	
Project	X	Continuous knowledge assessment		Report		Practical work	X
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Assessment:
Continuous monitoring of activities during lectures and exercises – 10%
Completion of project assignment and presentation – 50%
Timely and correct fulfillment of weekly practical assignments – 20%
Final written exam – 20%

Evaluation:

1. Through the practical project assignment, students will create graphic solutions for real-world examples of paperboard and cardboard products. 2. As part of the practical assignments, students will simulate 3D visualizations of multiple graphic solutions for paperboard products. 3. Through the execution of a multi-part project assignment in printed form (model), students will adjust the design to specific technical limitations and ensure alignment of the cut and print. 4. In the presentation, students will apply graphic design to a paperboard product consisting of multiple parts. 5. In the weekly practical assignments, students will adjust graphic design, cut layout, and materials to the technical capabilities of the selected press and post press technology. 6. In the written exam, students will identify the technological limitations involved in production and analyze design elements to ensure effective communication with the target audience.		
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Packaging Design: Successful Product Branding From Concept to Shelf 2nd Edition, Marianne R. Klimchuk, Sandra A. Krasovec (2006),(2012)</i>	1+4	
<i>Packaging the brand : the relationship between packaging design and brand identity / Gavin, Ambrose, Paul Harris. (2011)</i>	1	
Really good packaging explained : top design professionals critique 300 design sand explain what makes them work / Bronwen Edwards (2009)	1	
Structual packaging : design your own boxes and 3-D forms / Paul Jackson. (2012)	1	
Universal Principles of Design: 100 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Design Decisions, and Teach through Design / William Lidwell, Kritina Holden, Jill Butler. (2006), (2013)	1+2	
What is packaging design? / Giles Calver (2007.)	2	
1.10. Supplementary literature <i>Packaging Machinery Handbook : the complete guide to automated packaging machinery, including packaging line design/ John R Henry (2013.)</i> <i>The art and technique of digital color correction / Steve Hullfish (2008.)</i>		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form, discussions with future employers and alumni.		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Asst. prof. Josip Bota, PhD	
Course title	Product presentation	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	<i>III.</i>	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	1 + 2 + 0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The course aims to train students in creating visual representations of products using digital 3D visualization, illustration, and photography techniques. Students will learn to design and adapt product visuals for different media and advertising guidelines. They will analyze communication needs and conduct client interviews to define clear tasks for producing effective product presentations. The course provides students with the skills to create visuals that successfully convey the intended message, using appropriate illustration methods and light setups in digital 3D visualizations and photography.</i>
1.2. <i>Enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
1. <i>Use appropriate visual representations to achieve the desired communication.</i> 2. <i>Apply suitable illustration techniques when creating visual representations of a product.</i> 3. <i>Select proper light sources when creating product visuals using digital 3D modeling and photography.</i> 4. <i>Create product visuals for the purpose of sales and/or advertising.</i> 5. <i>Conduct interviews with clients to gather necessary information for effective communication.</i>
1.4. <i>Course content</i>
1. <i>Product analysis</i> 2. <i>Customer perception</i> 3. <i>Visualization tools and techniques</i> 4. <i>Selection and application of visual techniques</i> 5. <i>Product lighting</i> 6. <i>Illustration techniques</i> 7. <i>Product and brand</i> 8. <i>Target audience and design</i>

9. *Product advertising*

1.5. Types of Teaching Methods

- | | |
|--|--|
| ☒ Lectures | ☐ Independent tasks |
| ☐ Seminars | ☒ Multimedia and network |
| ☒ Exercises | ☐ Laboratory |
| ☒ Online education | ☐ Mentorship |
| ☐ Fieldwork | ☒ Other |

1.6. Student obligations

Active participation in classes and online activities

Keeping a work journal

Develop and present a project assignment

Complete weekly practical assignments

Pass practical exam

1.7. Student work monitoring

Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam		Oral exam	X	Essay		Research	
Project	X	Continuous knowledge assessment		Report		Practical work	X
Portfolio		Work journal	X				

1.8. Assessment and evaluation of student work during classes and at the final exam.

Assessment:

Continuous monitoring of activities during lectures, exercises and passing practical exam – 30%

Completion of project assignment and presentation – 60%

Timely and accurate completion of weekly practical assignments – 10%

Evaluation:

1. *Through the practical project assignment, students will create 3D product visualization, adjust lighting setup, and apply them to advertising media according to communication goals for the target audience.*
2. *In the practical project assignment, students will photograph the product, adjust lighting setup, and apply it to advertising media based on the communication goals for the target audience.*
3. *Through the practical project assignment, students will create an illustrated representation of the product, adjust the technique, and apply it to advertising media as per communication goals for the target audience.*
4. *In a computer-based project assignment, students will use acquired knowledge to create a specified 3D object with defined texture and lighting requirements (practical exam).*
5. *Students will verbally explain the key components of an interview with the client and rephrase responses as guidelines that help direct the visual content creator's work.*

1.9. *Mandatory literature and number of copies available in relation to the number of students currently attending the course*

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
The still life : in product presentation and editorial design / edited by Anna Sinofzik and Robert Klanten (2015)	1	
The Art and Science of Digital Compositing: Techniques for Visual Effects, Animation and Motion Graphics 2nd Edition, Steve Krug (2008)	1	
Light Science & Magic: An Introduction to Photographic Lighting 5th Edition / Fil Hunter, Steven Biver, Paul Fuqua (2007)	1	
Virtual Environments: Interactive 3D Graphics and Their Applications / Igor S. Pandžić (2011)	12	
Printing and Promotion Handbook : How to Plan, Produce, and Use Printing, Advertising, and Direct Mail / Daniel Melcher, Nancy Larrick. (1956), (1966)	1+1	
1.10. Supplementary literature <i>The Design of everyday things, Don Norman (2013)</i> <i>Design for a better world, Don Norman (2023)</i> <i>Digital Lighting and Rendering, Jeremy Birn (2013)</i>		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
<i>Student survey, self-evaluation form, discussions with future employers and alumni.</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Diana Bratić, PhD Assoc. Prof. Maja Rudolf, PhD	
Course title	Digital publishing	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	<i>III.</i>	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION

1.1. Course objectives		
<i>The aim of the course is to train students to fully manage digital publishing processes by acquiring the knowledge and skills required to independently create e-books and other digital publications (newspapers and magazines as well as audio and video recordings). Students will learn to use techniques and tools for designing, preparing content, structuring, formatting and publishing e-books in a responsive environment. Through the practical creation of e-books and other forms of digital publication, students will know how to select appropriate digital formats, create the structure and prepare the content of the digital publication, design it visually and integrate various multimedia (audio, video, animation) and interactive elements.</i>		
1.2. Enrollment conditions		
1.3. Expected learning outcomes		
1. Analyse the digital publishing market. 2. Identify the key trends, formats and platforms for e-book publishing and self-publishing. 3. Select appropriate digital publication formats based on given parameters and the type and purpose of multimedia content. 4. Apply software tools for the structuring, designing, formatting and preparing digital publication content for various digital formats. 5. Create a conceptual solution for an e-book with integrated interactive multimedia elements.		
1.4. Course content		
1. Comparison of conventional and digital publications, types of digital publications. 2. Elements and characteristics of e-books (cover, content, chapter links, static and dynamic content). 3. E-book readers and formats (advantages and disadvantages of the various formats, criteria for selecting the appropriate format, responsiveness). 4. Structuring and designing e-books (software tools for structuring and designing digital publications, preparing content for various formats). 5. Formatting and preparing content for digital publishing and self-publishing (technical requirements for formatting, tools for formatting digital publications). 6. Typography in digital publications (rendering of characters for different resolutions, text wrapping for variable screen widths, variable fonts). 7. Interactive multimedia elements in digital publications (audio, video, animations; software for creating multimedia content in digital publications). 8. Impact of new technologies (AI, VR, AR) on digital publishing.		
1.5. Types of Teaching Methods	☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☒ Other
1.6. Student obligations		
<i>Compulsory attendance at lectures and exercises as well as active participation in class and online activities. Completion and presentation of the project assignment.</i> <i>Participation in interactive sessions where students work in groups on practical tasks to apply the theoretical knowledge acquired.</i>		

Use of online platforms for communication, consultation and submission of materials and assignments.
Use of multimedia tools and online resources for teaching and access to additional materials.
Two intermediate examinations (colloquia).
Attendance of at least 50% in the lectures and 80% in the exercises as well as completion and presentation of the project assignment is required for participation in the examination.

1.7. Student work monitoring

Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam	X	Oral exam		Essay		Research	X
Project	X	Continuous knowledge assessment	X	Report		Practical work	X
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Assessment:

- 1. Project assignment within the exercises – 40%*
- 2. Intermediate exam (colloquia) 1 – 25%*
- 3. Intermediate exam (colloquia) 2 – 25%*
- 4. Attendance and activity in class – 10%*
- 5. Written exam – 50% (or as part of the continuous assessment through intermediate exams (colloquia))*

Evaluation:

- 1. As part of the exercises and the project assignment, students will independently analyse the digital publishing market.*
- 2. As part of the exercises and the project assignment, students will independently identify the key trends, formats and platforms for e-book publishing and self-publishing*
- 3. In the written examinations in the form of two mid-term exams (two colloquia) or a final written exam, students will demonstrate the ability to analyse, evaluate, select and apply appropriate digital publication formats based on given parameters and the type and purpose of the multimedia content.*
- 4. As part of the exercises and project assignment, students will independently apply software tools for the structuring, designing, formatting and preparing digital publication content for various digital formats.*
- 5. As part of the project assignment, students will independently create a conceptual solution for an e-book with integrated interactive multimedia elements.*

1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Hall, F. The Business of Digital Publishing: An Introduction to the Digital Book and Journal Industries. 2nd ed., Routledge, 2022, ISBN: 978-1138390584</i>	<i>1</i>	
<i>Padova, T. Adobe InDesign Interactive Digital Publishing: Tips, Techniques, and Workarounds for Formatting Across your Devices. 1st ed., Apress, 2017, ISBN: 978-1484224380</i>	<i>1</i>	

Garrish, M., Gylling, M. EPUB3 Best Practices. 1st ed., O'Reilly Media, 2013, ISBN: 978-1449329143	1	
1.10. Supplementary literature Video course: ePub Styling Essentials, Wiley, 2013, ISBN: 978-1119036739		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Continuous monitoring of all student activities in the subject, student self-assessment, course and lecturer evaluation. Information on learning outcomes achieved is used for lecturer self-assessment and improvement of working methods.		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Diana Bratić, PhD	
Course title	Management of Multimedia Production	
Study programme	Undergraduate university study programme Multimedia and Visual Communications	
Course status	Elective	
Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+0+1

COURSE DESCRIPTION
1.1. Course objectives
<i>The aim of the course is to equip students with the skills they need to effectively manage multimedia content production processes. This includes planning, organization, execution, coordination, resource control and the application of agile methods in a dynamic digital environment. Students will acquire a broad range of knowledge and skills required to integrate various multimedia elements, utilize advanced technologies such as artificial intelligence, and develop accessible and inclusive user experiences. Through practical examples and projects, students will learn to use software tools for pre-production, production and post-production, manage different media formats, analyse, optimize and integrate production processes, optimize and personalize multimedia content, and explore methods and strategies for preserving, protecting, distributing and monetizing content on various platforms.</i>
1.2. Enrollment conditions
1.3. Expected learning outcomes
1. Apply concepts and advanced software tools and AI technologies for planning, organization, optimization and personalization in the context of multimedia pre-production, production and post-production.

2. Analyse production processes and sub-processes to combine them into an optimal configuration for the production of specific multimedia content. 3. Manage different media formats to be integrated into coherent multimedia content on digital platforms. 4. Implement strategies for distribution and monetization of multimedia content using computer support for market analysis and distribution channel optimization. 5. Communicate effectively with clients to understand their specific requirements and recommend optimal solutions.							
1.4. Course content							
1. Fundamentals of multimedia production (digital media and content, principles, concepts, strategies). 2. Technologies and tools for multimedia production. 3. Planning and organization of multimedia production (defining objectives, planning processes, resource optimization, cost efficiency of multimedia production, project approach). 4. Analysis, planning and management of production capacities and workflows in multimedia production. 5. Computer support in multimedia production (tools for planning, managing, and controlling production). 6. Application of AI and advanced technologies in multimedia production (using AI for analysis, process optimization and personalization of multimedia content). 7. Integration of different multimedia elements (audio, video, graphics). 8. Platforms for digital publishing and self-publishing. 9. Methods for protecting, encrypting and storing multimedia content (content management on content and licensed servers, content protection techniques). 10. Post-production, distribution and monetization of multimedia content. 11. Content optimization for search engines (SEO). 12. Digital marketing in multimedia production. 13. Quality assurance (methods for quality control of the multimedia production process).							
1.5. Types of Teaching Methods				☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork		☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☒ Other	
1.6. Student obligations							
Compulsory attendance at lectures and exercises as well as active participation in class and online activities. Completion and presentation of the project assignment. Participation in interactive sessions where students work in groups on practical tasks in order to apply the learned theoretical knowledge about planning, organization, implementation, coordination and control of multimedia projects. Use of online platforms for communication, consultation and submission of materials and assignments. Use of multimedia tools and online resources for teaching and access to additional materials. Two intermediate examinations (colloquia). Attendance of at least 50% in the lectures and 75% in the seminars as well as completion and presentation of the project assignment is required for participation in the examination.							
1.7. Student work monitoring							
Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam	X	Oral exam		Essay		Research	X

Project	X	Continuous knowledge assessment	X	Report		Practical work	X
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Assessment:							
1. Project assignment within the exercises – 30% 2. Intermediate exam (colloquia) 1 – 30% 3. Intermediate exam (colloquia) 2 – 30% 4. Attendance and activity in class – 10% 5. Written exam – 60% (or as part of the continuous assessment through intermediate exams (colloquia))							
Evaluation							
1. As part of the project assignment as well as in the written examinations in the form of two mid-term exams (two colloquia) or a final written exam, students will independently apply concepts and advanced software tools and AI technologies for planning, organization, optimization and personalization in the context of multimedia pre-production, production and post-production. 2. As part of the project assignment as well as in the written examinations in the form of two mid-term exams (two colloquia) or a final written exam, students will demonstrate the ability to decompose and analyse production processes and sub-processes to combine them into an optimal configuration for the production of specific multimedia content. 3. As part of the project assignment students will independently manage different media formats to be integrated into coherent multimedia content on digital platforms. 4. As part of the project assignment students will independently implement strategies for distribution and monetization of multimedia content using computer support for market analysis and distribution channel optimization. 5. As part of the project assignment students will simulate effective communication with clients in order to demonstrate understanding of their specific requirements and can recommend optimal solutions.							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
Mayer, R. E., Fiorella, L. <i>The Cambridge Handbook of Multimedia Learning</i> . 3rd ed., Cambridge University Press, 2022. ISBN: 978-1108814669		1					
Mayer, R. E. <i>Multimedia Learning</i> . 3rd ed., Cambridge University Press, 2020. ISBN: 978-1316638088		1					
Connock, A. <i>Media Management and Artificial Intelligence: Understanding Media Business Models in the Digital Age</i> . 1st ed., Routledge, 2022, ISBN: 978-1032100951		1					
1.10. Supplementary literature							

Costello, V. *Multimedia Foundations: Core Concepts for Digital Design*. 3rd ed., Focal Press, 2023, ISBN: 978-1138391550

Allison, K. *Digital Media Management: A Focus on Performance and Growth*. 1st ed., Sentia Publishing, 2024, ISBN: 979-8-9897483-1-0

1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies

Continuous monitoring of all student activities in the subject, student self-assessment, course and lecturer evaluation. Information on learning outcomes achieved is used for lecturer self-assessment and improvement of working methods.

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Maja Brozović, PhD	
Course title	Structure of visual message	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	II.	
ECTS credit and teaching method	ECTS credits	3 ECTS
	Number of hours (L+E+S)	2+1+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The aim of the course is to obtain students for design of visual message regarding the purpose and the user, as well as to acquire knowledge that will enable the high-quality realization of the message in graphic media. Through this course, student will acquire basic knowledge of graphic design and graphic technology. Based on acquired knowledge, student will be able to select appropriate visual structure for the message presentation, considering the purpose and graphic media, and present the hierarchy of information at assigned format.</i>
1.2. <i>Enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
<i>1. Sketch the visual organization of information at assigned format of graphic media 2. Organize the hierarchy of information at assigned format of graphic media</i>

3. *Apply the appropriate visual structure considering the purpose of the visual message, the target group and the specificity of graphic media*
4. *To plan a coherent graphic design system*
5. *Propose a solution for effective message transmission considering the technological limitations of graphic media*

1.4. Course content

1. *Analysis of the visual message from the point of view of legibility, informativeness and objectivity*
2. *Visual message systems according to purpose: animation, stylization, coloristic*
3. *Hierarchy and organization of information, optical balance of structural elements*
4. *Target user groups and preferred graphic media*
5. *Graphic media - advantages and disadvantages*
6. *Newspapers - specifics, selection of visual structure for information presentation*
7. *Journal - specifics, selection of visual structure for information presentation*
8. *Advertisements - specifics, selection of visual structure for information presentation*
9. *Website - specifics, selection of visual structure for information presentation*

1.5. Types of Teaching Methods

- | | |
|--|--|
| ☒ Lectures
☐ Seminars
and workshops
☒ Exercises
☒ Online
education
☐ Fieldwork | ☒ Independent tasks
☐ Multimedia and
network
☐ Laboratory
☐ Mentorship
☒ Other |
|--|--|

1.6. Student obligations

Compulsory attendance of lectures and exercises.
Students perform the exercise every week independently with a feedback of task success, which is noted through the e-learning system.
Condition for the exam: minimum attendance of 80% in classes (lectures and exercises)

1.7. Student work monitoring

Attendance	x	Activity in classes		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project	x	Continuous knowledge assessment		Report	x	Practical work	
Portfolio							

1.8. *Assessment and evaluation of student work during classes and at the final exam.*

Assessment:

Project assignment within the lecture - 20%

Individual tasks within exercises - 80%

Evaluation:

- 1. Within the exercises, students will sketch the visual organization of information at assigned format of graphic media*
- 2. Within the exercises, students organize the hierarchy of information at assigned format of graphic media*
- 3. Within the exercises, students apply the appropriate visual structure for different target groups*
- 4. Within the exercises, they plan a coherent graphic design system for different graphic media*
- 5. Within the exercises, students select solution for effective message transmission considering the technological limitations of graphic media*

1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Lester, Paul Martin: Visual Communication : images with messages / Paul Martin Lester. Dallas : Lex Publishing, 2021.</i>		
<i>Aiello, Giorgia: Visual communication: understanding images in media culture / Giorgia Aiello, Katy Parry. London: SAGE Publications, 2020.</i>		
<i>Krause, Jim: Visual design : Ninety-five things you need to know. Told in Helvetica and dingbats / Jim Krause. [San Francisco, CA] : New Riders, 2015.</i>		
<i>Cullen, Kristin: Layout workbook : a real-world guide to building pages in graphic design / Kristin Cullen. Gloucester, Mass. : Rockport Publishers, 2005.</i>		
<i>Lupton, Ellen: Graphic design : the new basics / Ellen Lupton and Jennifer Cole Phillips. New York : Princeton architectural press, 2008.</i>		
<i>Müller-Brockmann, Josef: Grid Systems : a visual communication manual for graphic designers, typographers and three dimensional designers = Raster systeme : ein Handbuch für Grafiker, Typografen und Ausstellungsgestalter / Josef Müller-Brockman. Sulgen ; Zürich : Niggli Verlag, 2008.</i>		

1.10. Supplementary literature

1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Maja Brozović, PhD	
Course title	Visual identity	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	3 ECTS
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The aim of the course is to obtain students for design concepts of visual identity through trademark/logotype, elaboration of all aspects of visual identity and presentation of its intended applications in form of a book of graphic standards for print and digital media. Through this course, students will acquire basic knowledge of graphic design and graphic technology.</i> <i>Based on acquired knowledge, the student will be able to compare the advantages and disadvantages of trademark/logotype to competing companies and to design, present and implement an author's conceptual solution based on the client's guidelines for practical application.</i>
1.2. <i>Enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
<i>Analyse trademark and logotype solutions as a function of visual identity</i> <i>Create different conceptual solutions for trademark and logotype according to the client's guidelines</i> <i>To plan the book of graphic standards according to the client's requiring</i> <i>Present conceptual solutions in accordance to the requirements of public competitions</i>
1.4. <i>Course content</i>
<i>Client requirements - guidelines for the conceptual solutions of the trademark/logotype</i> <i>Analysis of the trademark/logotype related to the company/activity - advantages and disadvantages</i>

3. Concept strategy - conceptual solutions of the trademark/logotype
4. Selection of the conceptual solution based on the guidelines
5. Elaboration of the selected solution - Construction of the trademark/logotype and empty space
6. Elaboration of the selected solution - Minimum size, colors and typography
7. Elaboration of the selected solution - Permitted and unpermitted versions of trademark/logotype
8. Trademark/logotype application on substrates – Single-color, multi-color, photography
9. Trademark/logotype application on business documentation – memorandum, envelope, stamp, business card
10. Trademark/logotype application on promotional materials – t-shirts, cars, posters, pens, glasses, etc.

1.5. Types of Teaching Methods

- | | |
|--|---|
| ☒ Lectures | ☒ Independent tasks |
| ☐ Seminars and workshops | ☐ Multimedia and network |
| ☒ Exercises | ☐ Laboratory |
| ☒ Online education | ☐ Mentorship |
| ☐ Fieldwork | ☒ Other |

1.6. Student obligations

Compulsory attendance of lectures and exercises.
 Students perform the exercise every week independently with a feedback of task success, which is noted through the e-learning system.
 Condition for the exam: minimum attendance of 80% in classes (lectures and exercises)

1.7. Student work monitoring

Attendance	x	Activity in classes		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project	x	Continuous knowledge assessment		Report	x	Practical work	
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Assessment:

Project assignment within the lecture - 30%
 Individual tasks within exercises - 70%

Evaluation:

1. Within the exercises, students analyse and present in written form competitors' trademark/logotype solutions in relation to the obtained subject (client).
2. Within the lectures and the project assignment, students design conceptual solutions for trademark/logotype according to the guidelines of the public tender.
2. Within the lecture and project assignment, students present conceptual solutions for trademark/logotype to an expert audience

3. Students independently design a book of graphic standards.		
4. Within the exercises, students elaborate the selected conceptual solution of trademark/logotype		
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
Title	Number of copies	Number of students
<i>Cure, Sophie: Graphic design play book : an exploration of visual thinking / Sophie Cure and Aurelien Farina. London : Laurence King Publishing Ltd, 2020.</i>		
<i>Graphic Design: The New Basics Paperback – July 14, 2015 by Ellen Lupton (Author), Jennifer Cole Phillips (Author) - Ellen Lupton, J. C. P. (2015). Graphic Design the New Basics. US, Princeton Architectural Press (US).</i>		
<i>Airey, David: Identity designed : the definitive guide to visual branding / David Airey. Beverly : Rockport Publishers, 2019.</i>		
1.10. Supplementary literature Yezhova, O., Pashkevich, K., Tang, C., Meng, K. & Gao, X. (2024). Baseball team corporate identity design: Artistic and traditional culture aspects. <i>New Design Ideas</i> , 8(1), 81-96 https://doi.org/10.62476/ndi.8181		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Ivan Budimir Ph.D.	
Course title	<i>Mathematics 1</i>	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	<i>I.</i>	
ECTS credit and teaching method	ECTS credits	5
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. Course objectives
<i>The aim of the course is for students to be able to explain, interpret and connect basic mathematical concepts such as functions, limits and derivatives and recognize their role in graphic engineering, visual communications and multimedia. They will be able to recognize basic mathematical functions, determine their main features, and draw graphs. Students who pass the course will be able to interpret functions as well as the fundamental principles of differential calculus and their application in other areas. Students will be able to mathematically pose a problem from a real context, and consider, choose and propose a mathematical method of solving it. The goal of the course is for students to be able to adequately select suitable mathematical models based on functions and differential calculus in graphics, multimedia and visual communication, evaluate them, and use them to make calculations and draw precise and accurate conclusions.</i>
1.2. Enrollment conditions
1.3. Expected learning outcomes
1. Determine the basic properties of elementary functions and their boundary behavior. 2. Perform calculus from selected examples of differential calculus applications. 3. Examine the flow of a function using differential calculus methods. 4. Construct mathematical models of problems from graphic and multimedia contexts. 5. Communicate quantitative information in a graphic and multimedia environment. 6. Interpret mathematical concepts such as function, limits and derivatives.
1.4. Course content
1. Introduction to mathematical logic, computational logic and set theory. 2. Number sets, real numbers, rational and irrational numbers, and the golden ratio and the application of the golden ratio in graphic design. 3. Cartesian coordinate systems and complex numbers with application to fractal geometry in graphic design. 4. In-plane curves and their application in computer graphics with reference to Bezier curves. 5. Basics of the theory of functions with their given and fundamental determinants. 6. Basic properties of elementary functions with examples of their application in natural sciences, graphic technology and visual communications. 7. Linear transformation of the graph of a function with reference to the transformation of a digital image in vector graphics. 8. Definition of arrays, limits of arrays, and stacks of arrays. 9. Limits of functions and continuous functions with examples of continuity in natural phenomena. 10. Definition of the derivative of a function in a point with reference to Newton's and Leibniz's definition of derivative. 11. Definition of the derivative of a function, derivative theorems and derivative techniques. 12. Applications of derivatives in physics, chemistry, geometry and graphics. 13. Determination of monotony intervals, extremes and curvature intervals using derivatives. 14. Analysis of the flow of a function using derivatives with analysis of graphical functions. 15. Optimization methods with examples from the graphical context.

1.5. <i>Types of Teaching Methods</i>				X Lectures X Seminars and workshops ☐ Exercises X Online education ☐ Fieldwork		X Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other	
1.6. <i>Student obligations</i>							
<i>Attendance at lectures and seminars is mandatory.</i> <i>Condition for taking the exam: Attending at least 70% of lectures and 70% of seminars.</i>							
1.7. <i>Student work monitoring</i>							
Attendance	X	Activity in classes	X	Seminar paper	X	Experimental work	
Written exam	X	Oral exam	X	Essay	X	Research	
Project		Continuous knowledge assessment	X	Report		Practical work	X
Portfolio							
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
<i>Assessment:</i> <i>Seminar paper-10% Presentation of seminar paper within lectures and seminars</i> <i>Activities in class – 10% problem solving, solving short quizzes, participation in the teaching process</i> <i>Written exam – 80% or within the framework of continuous examination of knowledge through colloquium</i> <i>The paper, practical essay - it is intended to raise the acquired grade.</i> <i>Oral exam - they are designed to raise the acquired grade.</i> <i>Evaluation:</i> <i>In writing, the student will determine the basic properties of elementary functions, calculate the limits and asymptotes of curves.</i> <i>In writing, the student will implement the calculus from the selected examples of differential calculus applications through the tasks.</i> <i>The student will examine the course of the function in writing using the methods of differential calculus.</i> <i>In writing, the student will construct simpler mathematical models of selected problems from the graphic and multimedia context, and look for their solutions.</i> <i>At lectures or seminars, the student will present a seminar paper.</i> <i>In the oral exam, students will interpret mathematical concepts such as function, limits and derivative.</i>							
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>							
Title		Number of copies		Number of students			

P. JAVOR, <i>Mathematical Analysis 1</i> , Element, Zagreb, 1995.		
B. P. DEMIDOVIČ, <i>Tasks and Solved Examples from Higher Mathematics with Application to Technical Sciences</i> , Tehnička knjiga, Zagreb, 1978.		
F. AYRES, Jr., E. MENDELSON, <i>Shaum's Outline of Theory and Problems in Differential and Integral Calculus</i> , Mc Graw-Hill, Inc., USA, 1990.		
1.10. Supplementary literature 1. J. Stewart, <i>Calculus</i> , Cengage Learning, 7-th edition, 2012. 2. Steven H. Strogatz, <i>Nonlinear Dynamics and Chaos: With Applications to Physics, Biology, Chemistry, and Engineering (Studies in Nonlinearity)</i> , 2-nd edition, 2014.		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation for.		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Ivan Budimir, Ph.D.	
Course title	Mathematics 2	
Study programme	Undergraduate university study programme Multimedia and Visual Communications	
Course status	Compulsory	
Year	I.	
ECTS credit and teaching method	ECTS credits	5
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. Course objectives <i>The goal of the course is for students to be able to interpret the fundamental concepts of linear algebra and integral calculus. Students who pass the course will be able to mathematically analyze and pose a problem from a graphical and multimedia context, and consider, choose and propose a method of solving linear algebra, integral calculus and differential equations. The goal of the course is for students to be able to choose and construct mathematical models of real problems, evaluate and evaluate proposed models, make relevant calculations and draw mathematical conclusions. Students will be able to clearly and clearly present the results in a precise mathematical vocabulary.</i>

1.2. Enrollment conditions		
1.3. Expected learning outcomes		
1. Calculate rank, inverse, determinant of matrix and matrix equations. 2. Solve systems of linear equations with Gaussian algorithm and other methods. 3. Solve indefinite and definite integrals and differential equations with applications in graphic technology and visual communications. 4. Create mathematical models of problems from a real graphical environment using linear algebra methods and differential equations. 5. Communicate mathematical conclusions in different professional and business environments. 6. Explain concepts from linear algebra and infinitesimal calculus.		
1.4. Course content		
1. Basic concepts of matrix calculus and algebraic operations with matrices. 2. Rank, inverse, determinant of a matrix with applications to matrix equations. 3. Digital image as a matrix and matrix as an image and discussion of different mathematical methods of image filtering. 4. Definition of different types of systems of equations, Gauss-Jordan method of elimination and other methods. 5. Mathematical modeling of problems from a real context with an emphasis on graphic technology and multimedia using linear algebra methods. 6. Definition and computation of an indefinite integral using integration techniques such as methods of substitution and partial integration in an indefinite integral. 7. Definition and calculation of a definite integral by the Newton-Leibniz formula. 8. Application of a definite integral to problems from geometry, i.e. to surfaces, volumes, surfaces, centers of gravity of bodies and lengths of curves. 9. Application of certain integrals in chemistry and physics, mechanics and visual communications. 10. Definition of Differential Equation with Methods for Solving Selected Types of 1st Order Differential Equations. 12. Differential equations of the 2nd order with methods of solving. 13. Mathematical modeling with differential equations of problems from various fields such as graphic technology, design, multimedia and visual communications.		
1.5. Types of Teaching Methods	X Lectures X Seminars and workshops ☐ Exercises X Online education ☐ Fieldwork	X Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other
1.6. Student obligations		
Obligations of students Attendance at lectures and seminars is mandatory.		

<i>Condition for taking the exam: Attending at least 70% of lectures and 70% of seminars.</i>							
1.7. Student work monitoring							
Attendance	X	Activity in classes	X	Seminar paper	X	Experimental work	
Written exam	X	Oral exam	X	Essay	X	Research	
Project		Continuous knowledge assessment	X	Report	X	Practical work	X
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Assessment: <i>Seminar paper-10% presentation of seminar paper within lectures and seminars.</i> <i>Activities in class – 10% problem solving, solving short quizzes, participation in the teaching process.</i> <i>Written exam – 80% written exam or within the framework of continuous examination of knowledge through colloquiums.</i> <i>The essay is designed to raise the acquired grade.</i> <i>The oral exam, report and practical work are provided for raising the acquired grade.</i> Evaluation: <i>In writing, the student will calculate the rank, inverse, determinant of the matrix and matrix equations through the assignments.</i> <i>Will solve written tasks on systems of linear equations using the Gaussian algorithm and other methods.</i> <i>In writing, he/she will determine indefinite and definite integrals and solve differential equations as well as problems with their applications in graphic technology and visual communications.</i> <i>In written form, they will make mathematical models of problems from a real graphical environment using linear algebra methods and differential equations.</i> <i>At lectures or seminars, the student will present a seminar paper.</i> <i>At the oral exam, the student will interpret mathematical concepts from linear algebra and infinitesimal calculus.</i>							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
<i>Title</i>		<i>Number of copies</i>		<i>Number of students</i>			
<i>B. P. DEMIDVIČ, Tasks and Solved Examples from Higher Mathematics with Application to Technical Sciences, Tehnička knjiga, Zagreb, 1978.</i>							
<i>W. H. Steeb, Problems And Solutions in Introductory And Advanced Matrix Calculus, Willi-Hans Steeb, 2006.</i>							
<i>. AYRES, Jr., E. MENDELSON, Shaum's Outline of Theory and Problems in</i>							

Differential and Integral Calculus, Mc Graw-Hill, Inc., USA, 1990.		
1.10. Supplementary literature 1. J. Stewart, <i>Calculus</i> , Cengage Learning, 7-th edition, 2012.		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Ivan Budimir Ph.D.	
Course title	Probability and statistics	
Study programme	Undergraduate university study programme Multimedia and Visual Communications	
Course status	Compulsory	
Year	II.	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+1+0

COURSE DESCRIPTION
1.1. Course objectives
<i>Students should interpret basic concepts from probability and statistics. The goals of the course are that students can apply probabilistic and statistical methods to graphic and multimedia phenomena, but also the world of sports as well as games of chance. Students should be able to recognize probabilistic regularities in graphic engineering, multimedia and visual communications, they should be able to calculate the probabilities of winnings in games of chance, and probabilities that appear in multimedia and visual communications. Students need to find and apply the laws of probability theory and distributions of random variables in the real context they are dealing with. Students should provide examples of the application of normal distribution in the graphic profession and other fields. Students should successfully perform descriptive statistical data processing, and conduct basic statistical tests on samples.</i>
1.2. Enrollment conditions
<i>Attended course Mathematics 1</i>
1.3. Expected learning outcomes
1. Determine the number of elements of finite sets using permutations, variations and combinations. 2. Choose a probabilistic method suitable for describing a corresponding random phenomenon in the fields of sports, graphic engineering and multimedia.

3. Calculate the probabilities of occurrence of random events in sports, graphic engineering, multimedia and graphic communications. 4. Solve selected problems using discrete distributions. 5. Solve selected problems using continuous distributions, with an emphasis on normal distribution. 6. Make a descriptive statistical analysis of the selected sample.							
1.4. Course content							
1. Basic combinatorial principles. 2. Counting methods such as permutations, variations, and combinations with and without repetition with applications in graphics, multimedia, sports, and other fields. 3. Introduction to probability theory with basic definitions. 4. Probability spaces with examples from the world of sports, technology and multimedia. 5. Conditional probability and independence of events and a complete system of events. 6. Bayes' theorem, event trees and probability trees with applications to random phenomena from sports, games of chance, print and visual communications. 7. Definition of random variables and their division into discrete and continuous random variables. 8. Binomial, Poisson and geometric distributions and their applications in graphic engineering and visual communications, sports and games of chance. 9. Definition of continuous distribution over density function and distribution function. 10. Basic numerical parameters of random variables. 11. Exponential and normal distribution with applications. 12. Laws of large numbers and Central limit theorems with applications. 13. Introduction to descriptive and mathematical statistics. 14. Basic tests of hypotheses about unknown parameters. 15. Descriptive statistical analysis of samples in the field of graphic engineering, multimedia and visual communications.							
1.5. Types of Teaching Methods				X Lectures X Seminars and workshops ☐ Exercises X Online education ☐ Fieldwork		X Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other	
1.6. Student obligations							
Attendance at lectures and exercises is mandatory. Students will be given tasks that they will solve independently, which will be evaluated in lectures or through the e-learning system. Minimum attendance at 50% of lectures and 50% of seminars.							
1.7. Student work monitoring							
Attendance	X	Activity in classes	X	Seminar paper	X	Experimental work	
Written exam	X	Oral exam	X	Essay	X	Research	X

Project	X	Continuous knowledge assessment	X	Report		Practical work	
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Assessment: <i>Seminar paper-10% presentation of seminar paper within lectures and seminars.</i> <i>Activities in class – 10% problem solving, solving short quizzes, participation in the teaching process.</i> <i>Research – 10% statistical analysis of the selected sample.</i> <i>Projects – 10% creation of project tasks that will be evaluated in lectures or through the e-learning system</i> <i>Written exam – 60% written exam or within the framework of continuous examination of knowledge through colloquiums.</i> <i>The essay is designed to raise the acquired grade.</i> <i>The oral exam is designed to raise the acquired grade.</i> Evaluation: <i>In writing, the student will solve a combinatorial problem using permutations, variations and combinations.</i> <i>The student will choose a probabilistic method suitable for describing a corresponding random phenomenon in the field of sports, graphic engineering and multimedia, which will be expressed in writing.</i> <i>They will calculate in writing the probabilities of the occurrence of random events, and will design and solve a project assignment from the world of sports or graphic engineering, multimedia and graphic communications.</i> <i>The student will solve selected problems in writing using discrete distributions.</i> <i>Demonstrate in writing the solution of selected problems by means of continuous distributions, with an emphasis on normal distribution, and design and solve the same through a project task.</i> <i>They will make a descriptive statistical analysis of the selected sample, which they will submit as a result of the research.</i>							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
Ivan Budimir, <i>Probability and Statistics. With applications in graphic technology. Teaching materials for the web.</i> 2013.							
Neven Elezović, <i>Probability and Statistics, Element, Zagreb,</i> 2018.							
Sheldon M. Ross, <i>Introduction to Probability and Statistics for Engineers and Scientists</i> , 3. Edition, E lsevier Inc. , Berkeley, 2004.							
1.10. Supplementary literature							

1. Murray R. Spiegel, John Schiller, R. Alu Srinivasan, <i>Schaum's Outline of probability and statistics</i> , 4. Edition, McGraw Hill, 2012.
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies
Student survey, self-evaluation form

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	asst. prof. Vladimir Cviljušac, Ph.D.	
Course title	Digital image processing	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	Elective	
Year	III.	
ECTS credit and teaching method	ECTS credits	3 ECTS
	Number of hours (L+E+S)	1 + 2 + 0

COURSE DESCRIPTION
1.1. Course objectives
<i>Students will be able to explain different formats and representations of digital images as well as compression methods (both lossless and lossy). They will understand the theoretical foundations of digital image processing, including signal and noise theory, as well as interpolation and image reconstruction methods. Additionally, they will be capable of applying a multispectral camera for digital image acquisition, including equipment setup, calibration, and the capturing process. Ultimately, students will be able to analyze digital images using computational tools and methods for sampling, quantization, and image filtering.</i>
1.2. Enrollment conditions
<i>None</i>
1.3. Expected learning outcomes
<i>Explain different formats and representations of digital images, as well as image compression methods. Explain the theoretical foundations of digital image processing. Apply a multispectral camera for digital image acquisition. Use computational tools for digital image processing.</i>
1.4. Course content
1. Introduction to digital image processing 2. Light and color, sources of light 3. Formats and representations of digital images

4. Image compression methods
5. Multispectral imaging systems
6. Basics of working with multispectral systems
7. Spectral characteristics of signals
8. Signals and noise in digital images
9. Interpolation and image reconstruction methods
10. Theoretical foundations of digital image processing
11. Computational tools for digital image analysis
12. Sampling and quantization methods
13. Digital image filtering
14. Application of artificial intelligence in digital image processing
15. Interpretation of results

1.5. Types of Teaching Methods

- | | |
|--|--|
| ☒ Lectures | ☒ Independent tasks |
| ☐ Seminars and workshops | ☒ Multimedia and network |
| ☒ Exercises | ☐ Laboratory |
| ☒ Online education | ☐ Mentorship |
| ☐ Fieldwork | ☐ Other_ |

1.6. Student obligations

*The student must regularly attend classes and successfully complete individual assignments.
Requirement for taking the exam: a minimum of 50% attendance in classes and 80% completion of exercises.*

1.7. Student work monitoring

Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam	X	Oral exam		Essay		Research	
Project	X	Continuous knowledge assessment	X	Report		Practical work	X
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Grading:

Written exam – 40% or through continuous assessment (midterms)

Midterm 1 – 20%

Midterm 2 – 20%

Project assignment (exercises) – 60%

Evaluation:

IU1 Written exam with theoretical questions.

IU2 Written exam with theoretical questions.

IU3 Practical exercises and work on the project assignment.		
IU4 Practical exercises and work on the project assignment.		
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Image and Video Compression for Multimedia Engineering: Fundamentals, Algorithms, and Standards, Second Edition (Image Processing Series) (2nd Edition), Yun-Qing Shi, Huifang Sun, 2008.</i>		
<i>Tinku Acharya, Ajoy K. Ray: Image Processing Principles and Applications, Wiley, 2005.</i>		
1.10. Supplementary literature		
1. Wilhelm Burger, Mark J. Burge: <i>Principles of Digital Image Processing - Fundamental Techniques</i>, Springer-Verlag London Limited, 2009. 2. H. J.Trussell, M. J.Vrhel: <i>Fundamentals of Digital Imaging</i>; Cambridge University Press, 2008. 3. Chris Solomon, Toby Breckon: <i>Fundamentals of Digital Image Processing A Practical Approach with Examples in Matlab</i>; John Wiley & Sons, Ltd, 2011. 4. Joanne Dyer, Giovanni Verri, John Cupitt: <i>Multispectral Imaging in Reflectance and Photo-induced Luminescence modes: A User Manual</i>; The British Museum, 2013. 5. Michel A. Van Hove, <i>Everyday physics : colors, light and optical illusions</i>, New Jersey : World Scientific, 2022.		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	asst. prof. Vladimir Cviljušac, Ph.D.	
Course title	User Interfaces	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	Compulsory	
Year	II.	
ECTS credit and teaching method	ECTS credits	4 ECTS
	Number of hours (L+E+S)	2 + 2 + 0

COURSE DESCRIPTION		
1.1. Course objectives		
Students will learn to recognize and define the basic elements of user interfaces, and will be able to describe different modes of interaction. In addition, students will understand the key concepts of atomic design and how these concepts are applied in creating sustainable design systems. The acquired knowledge will enable them to develop design systems, define styles, and create basic reusable design components. They will also be capable of creating simple prototypes, demonstrating how various design elements can be integrated into cohesive and sustainable systems.		
1.2. Enrollment conditions		
Attended course Fundamentals of Computing and Programming		
1.3. Expected learning outcomes		
Identify the basic components of user interfaces and modes of interaction. Explain the basic principles of atomic design and their application in creating sustainable design systems. Apply atomic design methods to create design systems. Develop simple prototypes using the principles of atomic design.		
1.4. Course content		
1. Introduction to user interfaces and design systems 2. Principles of user interface design 3. Basic components of user interfaces 4. Navigation in user interfaces 5. Types of interaction with user interfaces 6. Device types and technologies for interaction with user interfaces 7. Design systems 8. Principles of atomic design (atoms, molecules, organisms, and templates) 9. Defining styles and naming rules for components 10. Creating basic design components (component design) 11. Responsive interfaces 12. Prototyping user interfaces (user flow diagrams) 13. User interface testing (basics of user experience) 14. Documenting design systems 15. Trends and the future of user interfaces (spatial user interfaces)		
1.5. Types of Teaching Methods	☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_
1.6. Student obligations		
The student must regularly attend classes and successfully complete individual assignments. Requirement for taking the exam: a minimum of 50% attendance in classes and 80% completion of exercises.		
1.7. Student work monitoring		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assti. Prof. Filip Cvitić, PhD	
Course title	User Experience Research	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The goal of the UX Research course is to equip students with the ability to explain and apply research methodologies used in the development of digital products. Students will be able to use defined metrics to track users and identify the most appropriate research method based on user needs, the type, and the requirements of the project. Additionally, students will be able to analyze and correlate user data. With knowledge of available methods, students will be able to assess and choose which methods to use in order to create the best solutions that address user problems. Upon completion of the course, students will be able to use research methodologies and be prepared for challenges in real-world user experience projects.</i>
1.2. <i>Enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
Apply quantitative and qualitative methods for data collection and analysis in the context of digital product development. Establish an approach to researching user needs. Analyze user experience using metrics and propose improvements that lead to better and more intuitive digital products. Offer solutions to challenges in digital product design based on research data and analysis.
1.4. <i>Course content</i>
<i>Design Thinking</i> <i>Research Methods</i> <i>Empathy Map</i> <i>Business Canvas Models</i> <i>Scrum Methodology</i> <i>Lean UX vs. Agile Methodology</i>

Brand Strategy

UX Roadmap

UX Strategy

Design Sprint

Blue Ocean Strategy

12-Week Year Methodology

Examples of Business Plans

1.5. Types of Teaching Methods

☒ Lectures

☐ Seminars
and workshops

☒ Exercises

☒ Online

education

☐ Fieldwork

☐ Independent tasks

☐ Multimedia and
network

☐ Laboratory

☒ Mentorship

☐ Other_

1.6. Student obligations

Students should regularly attend lectures and exercises with the possibility of a certain number of absences. The student should do all the exercises, make the exam documentation and at the end have a presentation of his project.

1.7. Student work monitoring

Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	X
Project	X	Continuous knowledge assessment		Report		Practical work	X
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Grading:

Project Assignment:

Identifying the process: 15%

Demonstrating methodologies: 12%

Identifying strengths and weaknesses: 15%

Applying best practices: 20%

Using acquired skills: 15%

Designing and presenting their own product: 15%

Class attendance: 8%

Evaluation:

1. In written form, explain basic knowledge in the field of UX research through the project assignment.

2. In written form, students elaborate on their knowledge of various research methods through the project assignment within the exercises.

3. In written form, establish and argue an approach to researching user needs and the methods to be used for data collection.

4. In written form, draw conclusions based on the obtained data using quantitative and qualitative data collection methods.		
5. Offer improvements to their own work based on the conclusions drawn and the collected data, demonstrating independence in evaluating their work.		
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Yablonski, Laws of UX: Using Psychology to Design Better Products & Services, 2020</i>	1	
<i>Weinschenk, 2020, 100 things every designer needs to know about people</i>	1	
<i>Torres, Continuous Discovery Habits: Discover Products that Create Customer Value and Business Value, 2021</i>	1	
<i>Kuang, User Friendly- How the Hidden Rules of Design Are Changing the Way We Live, Work, and Play, 2020</i>	1	
<i>Tidwell, Designing Interfaces: Patterns for Effective Interaction Design, 2020</i>	1	
1.10. Supplementary literature		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form, etc..		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Asst.prof. Krešimir Dragčević, PhD prof. Igor Zjakić, PhD	
Course title	Print design solutions	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	II.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION

1.1. <i>Course objectives</i>							
Recognize basic printing technologies and necessary graphic materials for the realization of design solutions. Apply acquired knowledge in creating new optimized visual and technical solutions. Explain the basic principles of construction and color management through various technologies of printing processes with the aim of implementing the desired design solutions. Be able to collect and analyze the visual and technological parameters of printing with the aim of designing a more environmentally friendly product or production process, and be able to professionally and articulately process the collected parameters and offer environmentally and ethically favorable solutions. To connect knowledge about printing processes with the purpose of technological optimization of the generation of the desired visual solutions in the design of a graphic product.							
1.2. <i>Enrollment conditions</i>							
Attended Basic Graphic Materials course							
1.3. <i>Expected learning outcomes</i>							
1. Explain the basic principles of graphic technology and their application in industry. 2. Choose printing techniques and printing forms for different graphic products. 3. Differentiate basic graphic materials. 4. Apply socially responsible and ethically proactive behavior in professional work.							
1.4. <i>Course content</i>							
1. Basic principles of printing design solutions 2. Basic principles of screening 3. Construction of colors in printed media 4. Printing techniques and graphic materials from the aspect of designing finished products 5. Application of process, spot and special printing inks depending on the printing technique 6. Visual parameters of print quality 7. Color management through printing processes 8. Ecological-ethical aspects of design in printed media							
1.5. <i>Types of Teaching Methods</i>				☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork	☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other		
1.6. <i>Student obligations</i>							
Active attendance of teaching content							
1.7. <i>Student work monitoring</i>							
Attendance	☒	Activity in classes	☒	Seminar paper		Experimental work	
Written exam	☒	Oral exam	☒	Essay		Research	
Project		Continuous knowledge assessment	☒	Report		Practical work	

Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Written exam 40%							
Oral exam 40%							
Class attendance 20%							
<i>Through the written exam, students will explain the basic principles of graphic technology and their application in industry.</i>							
<i>Through exercises, students will choose printing techniques and printing forms for different graphic products.</i>							
<i>Through exercises, students will distinguish basic graphic materials.</i>							
<i>Through exercises, students will apply socially responsible and ethically proactive behavior in professional work.</i>							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
H. Kipphan et al., Handbook of Print Media, Springer, Berlin, 2001.							
Tehničko uređivanje u procesu izrade knjige, Igor Zjakić, Hrvatska sveučilišna naklada, Zagreb, 2013.							
1.10. Supplementary literature							
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies							
Student survey, Self-evaluation							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Asst. Prof., Katarina Itrić Ivanda	
Course title	Sensors in interactive systems	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+0+1

COURSE DESCRIPTION
1.1. Course objectives

<i>The goal of the course is to familiarize students with the basic principles of sensor operation and their application in interactive systems. Sensors are fundamental components of all interactive displays, and the quality of these sensors directly impacts the user experience. Students will be able to independently identify, classify, and compare appropriate sensors for specific applications, as well as explain methods for processing and analyzing sensor-collected data. By analyzing case studies, students will learn about the latest technologies and trends in sensor development, providing them with additional knowledge to create more tailored multimedia solutions based on the intended display.</i>							
1.2. Enrollment conditions							
1.3. Expected learning outcomes							
1. Define the basic characteristics of sensors used in interactive systems. 2. Explain the optical and electronic components of sensors. 3. Classify sensors based on their physical properties. 4. Interpret the limitations of specific sensors in interactive systems.							
1.4. Course content							
1. Characteristics of sensors in interactive systems. 2. Principles of data collection and processing by sensors in interactive systems. 3. Physical principles of sensors in interactive systems. 4. Optical components of sensors and their limitations. 5. Electronic components of sensors. 6. Position, speed, and acceleration sensors. 7. Force, deformation, and tactile sensors. 8. Pressure and flow sensors. 9. Acoustic sensors. 10. Light sensors. 11. Temperature and humidity sensors.							
1.5. Types of Teaching Methods				☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork		☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_	
1.6. Student obligations							
Presentation of a research assignment during the seminar. Attendance of 70% of the classes.							
1.7. Student work monitoring							
Attendance	x	Activity in classes	x	Seminar paper		Experimental work	

Written exam	x	Oral exam		Essay		Research	x
Project		Continuous knowledge assessment	x	Report		Practical work	
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Grading: Research assignment presented during the seminar – 35% Written exam – 60% or through continuous assessment (midterms). Midterm 1 – 30% Midterm 2 – 30% Class participation – 10% Evaluation: - In written form, students will explain the basic characteristics of sensors used in interactive systems. - In written form, students will explain the optical and electronic components of sensors. - In written form, students will classify sensors based on their physical properties. - Through the research assignment, students will interpret the limitations of existing sensors in interactive systems using a specific example.							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
Ariel Lipson, Stephen G. Lipson, Henry Lipson, Optical Physics, Cambridge : Cambridge University Press, 2011.		1					
Fraden, Jacob, Handbook of modern sensors: Physics, Designs, and Application, New York :2010.		1					
Ravidra Das, The science of biometrics : security technology for identity verification, New York : Routledge, 2019.		1					
Kasap, Safa O., Optoelectronics and Photonics : principles and practices , Upper Saddle River : Pearson Education, 2013.		1					
1.10. Supplementary literature							
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies							
Student survey, self-evaluation form.							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assist. Prof. Katarina Itrić Ivanda	
Course title	Sound and light	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	I.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	1+0+2

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The aim of the course is to introduce students to the basic physical concepts of sound and light and their application in various areas of multimedia engineering. Through the course, students will acquire fundamental knowledge in the fields of sound perception, interference, resonance, modulation, and the potential applications of sound in multimedia, video games, and augmented reality. Additionally, students will gain an understanding of the fundamental principles of geometric and physical optics in multimedia engineering and the technological limitations that arise from them. In seminars, students will develop critical thinking, data analysis, and visualization skills through demonstrative experiments and group work.</i>
1.2. <i>Enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
<i>1. Explain the basic principles of optics, electromagnetism, and sound through examples from multimedia engineering.</i> <i>2. Interpret the characteristics and quantities used to describe sound waves.</i> <i>3. Discuss the limitations of geometric and physical optics in multimedia engineering.</i> <i>4. Classify light sources based on the mechanisms of radiation generation.</i> <i>5. Explain the integration of light elements in various multimedia systems.</i>
1.4. <i>Course content</i>
<i>1. Sources of sound waves and basic characteristics of sound waves</i> <i>2. Superposition of sound waves</i> <i>3. Sound perception</i> <i>4. Conversion of analog to digital signals</i> <i>5. The role of sound in multimedia, video games, and augmented reality</i> <i>6. Sources of electromagnetic radiation and their characterization</i>

7. Interaction of light and matter							
8. Optical components of various systems for recording and reproduction							
9. Interference, diffraction, and polarization of light and their application in multimedia engineering							
10. Application of optical phenomena in digital communication devices							
1.5. Types of Teaching Methods				☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork		☐ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_	
1.6. Student obligations							
Attendance at 75 % of classes.							
1.7. Student work monitoring							
Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam	X	Oral exam		Essay		Research	
Project		Continuous knowledge assessment	X	Report		Practical work	
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Assessment: Written exam – 70% or through continuous knowledge assessment (short tests after each of the 10 planned teaching units, each unit contributing 7% to the final grade). Active participation in class – 30% Evaluation: - In written form, through continuous assessment or a written exam, explain the basic principles of optics, electromagnetism, and sound. - Independently or in a group, interpret the characteristics and quantities used to describe sound waves in written form as part of a seminar. - Independently or in a group, discuss the limitations of geometric and physical optics in multimedia engineering in written form as part of a seminar. - In written form, through continuous assessment and/or seminars, classify light sources based on the mechanisms of radiation generation. - In written form, through continuous assessment and/or seminars, explain the integration of light elements in various multimedia systems.							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
Henč-Bartolić, Višnja, Valovi i optika : udžbenik fizike za studente		2					

<i>Elektrotehničkog fakulteta, Zagreb : Školska knjiga, 2004.</i>		
<i>Kulišić, Petar, Lopac, Vjera, Elektromagnetske pojave i struktura tvari : udžbenik fizike za studente Fakulteta kemijskog inženjerstva i tehnologije Sveučilišta u Zagrebu, Zagreb : Školska knjiga, 2003.</i>	4	
<i>Henč-Bartolić, Višnja, Mile Baće, Lahorija Bistričić, Dubravka Horvat, Petar Kulišić, Zoran Narančić, Tomislav Petković, Dubravko Pevec, Riješeni zadaci iz valova i optike : udžbenik za studente Elektrotehničkog fakulteta, Zagreb : Školska knjiga, 2002.</i>	1	
<i>Vjera Lopac, Petar Kulišić, Vesna Volovšek, Vladimir Dananić, Riješeni zadaci iz elektromagnetskih pojava i strukture tvari / : Udžbenik fizike za studente Fakulteta kemijskog inženjerstva i tehnologije Sveučilišta u Zagrebu, Zagreb : Školska knjiga, 1992.</i>	2	
<i>Ballou, Glen, Handbook for sound engineers, Burlington, MA : Focal Press, 2008.</i>	1	
<i>1.10. Supplementary literature</i>		
<i>1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
<i>Student survey, self-evaluation form.</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Dr. Sonja Jamnicki Hanzer, Assist. Prof. Dr. Maja Stržić Jakovljević, Prof. Dr. Branka Lozo	
Course title	Basic graphic materials	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	Compulsory	
Year	I.	
	ECTS credits	4

ECTS credit and teaching method	Number of hours (L+E+S)	2+1+0
---------------------------------	-------------------------	-------

COURSE DESCRIPTION	
<i>1.1. Course objectives</i>	
The aim of the course is to familiarize students with the composition and basic properties of printing inks and paper substrates and their proper use in the graphic arts industry. A further aim is to teach students the properties and special features of substrates and printing inks for the individual printing processes. Students will acquire the basic and practical skills required to make decisions about the selection of printing inks for specific substrates in order to achieve the desired print quality and meet the final purpose of the graphic product. Students will acquire skills to carry out laboratory tests on paper and printing inks related to assessing the stability and durability of prints on the substrate.	
<i>1.2. Enrolment conditions</i>	
<i>1.3. Expected learning outcomes</i>	
1. Explain the properties of the components of basic graphic materials and their functions within the material. 2. Explain the fundamental properties of basic graphic materials with the aim of creating a high-quality graphic product. 3. Explain the composition and properties of printing substrates and printing inks. 4. Identify possible causes of printing problems resulting from the use of inadequate printing inks and/or substrates. 5. Select the optimal printing ink depending on the printing technique, type of printing substrate and the intended use of the graphic product. 6. Independently conduct laboratory tests on printing substrates and printing inks, evaluating the durability and stability of prints.	
<i>1.4. Course content</i>	
Raw materials for the production of printing substrates, types and processing of cellulose Properties of printing substrates defined during production and fiber additives Finishing in the production of printing substrates, coatings Dimensional stability and moisture of fibrous materials General and structural properties of printing substrates Surface and optical properties of printing substrates Mechanical and chemical properties of printing substrates Components of printing inks: Colorants, vehicles and additives in inks General and rheological properties of printing inks and drying/curing mechanisms of printing inks Identification of possible problems with ink's incompatibility depending on the type of substrate (ink blocking and picking) – Performance of laboratory tests Properties and special features of printing inks for different printing processes (printing inks for letterpress, offset printing, gravure printing, screen printing, inkjet printing) Creation of standardized laboratory test prints, ink transfer test – absorption capacity of the substrate for a specific printing ink Determination of the colorimetric values of process offset inks on various substrates Mechanical resistance of laboratory prints on various types of paper – Testing the rub resistance of prints	

Technical specifications of commercially available substrates and printing inks.

1.5. Types of Teaching Methods

- | | |
|--|---|
| ☒ Lectures
☐ Seminars
and workshops
☒ Exercises
☒ Online
education
☐ Fieldwork | ☒ Independent tasks
☐ Multimedia and
network
☒ Laboratory
☐ Mentorship
☒ Other |
|--|---|

1.6. Student obligations

A minimum attendance of 50% of the lectures, 80% of the exercises and a passed compulsory colloquium from the exercises are prerequisites for taking the examination.

1.7. Student work monitoring

Attendance	X	Activity in classes	X	Seminar paper		Experimental work	X
Written exam	X	Oral exam	X	Essay		Research	
Project		Continuous knowledge assessment	X	Report		Practical work	X
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Grading:

Project assignment during the exercises – 7%

Compulsory colloquium from the exercises – 15%

Written examination – 60% or through continuous knowledge assessment (colloquia):

Colloquium 1 – 30%

Colloquium 2 – 30%

Online quizzes – 10%

Attendance (more than 50%) – 8%

Evaluation of Learning Outcomes:

1. In the written exam and/or colloquium, students will explain the properties of the components of basic graphic materials and their functions within the material.
2. In the written exam and/or colloquium, students will explain the fundamental properties of basic graphic materials with the aim of creating a high-quality graphic product.
3. In the written exam and/or colloquium, students will explain the composition and properties of printing substrates and printing inks.
4. In the laboratory exercises, students will identify possible causes of printing problems arising from the use of inadequate printing inks and/or substrates.
5. In the written exam and/or colloquium, students will select the optimal printing ink depending on the printing technique, the type of printing substrate, and the intended use of the graphic product.
6. In the laboratory exercises, students will independently conduct laboratory tests on printing substrates and printing inks, evaluating the durability and stability of prints.

1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
Title	Number of copies	Number of students
Holik, Herbert: „Handbook of Paper and Board“, Weinheim : Wiley-VHC, 2013., ISBN 9783527331840, WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim, 2013.	1	
Katarina Gerić, Miljana Prica, Rastko Milošević: „Grafički materijali: praktikum za vežbe“, Novi sad: Fakultet tehničkih nauka, 2018., ISBN 9788660220341	1	
Golubović, Adriano: „Svojstva i ispitivanje papira“, Zagreb: Viša grafička škola, 1993.	1	
Golubović, Adriano: „Tehnologija izrade i svojstva papira“, Zagreb: Viša grafička škola, 1984.	1	
Prica Miljana, Adamović Savka: Grafički materijali - 3. izd. - Novi Sad : Fakultet tehničkih nauka, 2021 (Novi Sad : FTN, Grafički centar GRID).	1	
The Printing Ink Manual, Fifth Edition, R. H. Leach, R. J. Pierce (Eds.), Springer, Dordrecht, 2008.	1	
Ronald E Todd, Printing inks : Formulation principles, manufacture and quality control testing procedures, Pira International, 1994	1	
Abd El-Rahman Elsayed Saad, A., Aydemir, C., Ayhan Özsoy, S., & Yenidoğan, S. (2021). Drying methods of the printing inks. Journal of Graphic Engineering and Design, 12(2), 29–37. https://doi.org/10.24867/JGED-2021-2-029	Available online	
1.10. Supplementary literature		
1. Novak, Gabrijela: „Papir, karton, lepenka“, Ljubljana: Naravoslovnohitiška fakulteta, Oddelek za tekstilstvo, 1998., ISBN 9616045091		
2. Rešetar, Mirko: „Papir : proizvodnja, svojstva, primjena“, Osijek: Društvo grafičkih inženjera i tehničara Osiječko - baranjske županije, 2001., ISBN 1539839408		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form.		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Asst. Prof. Josip Jozić, PhD in art	
Course title	Original graphics	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	II	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	1+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>Students are trained through practical work in original printmaking, drypoint, etching in the linear representational system, aquatint in the multi-tonal representational system, reserve, and combined techniques. They also acquire competencies in assessing the professional and creative scope of these creative expressions. Instruction is primarily carried out through practical exercises, but also through lectures, consultations, and mentorship, and knowledge is assessed by reviewing conceptual work sketches and the realization of all individual practical works of the program.</i>
1.2. <i>Enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
1. <i>Create graphic works using techniques such as drypoint, etching, aquatint, reserve, and combined techniques.</i> 2. <i>Evaluate the professional and creative scope of various graphic expression techniques.</i> 3. <i>Analyze one's own and others' work.</i> 4. <i>Develop conceptual sketches for personal graphic projects with mentor support.</i> 5. <i>Apply different graphic techniques in artistic expression.</i>
1.4. <i>Course content</i>
1. <i>Original graphic techniques, concept, and historical-humanistic significance:</i> 2. <i>Original graphics, specific creative expression. Artistic practice.</i> 3. <i>Valorization of original graphics, multi-originals, technical characteristics, tools, materials, and printing methods. Relief printing – woodcut and linocut, standards.</i> 4. <i>Technical instructions.</i>

5. <i>Type of drawing sketches for linocut, selection, and realization of the printing form, test print, control, final appearance, printing a specific edition, signing, and labeling.</i> 6. <i>Original printmaking techniques, intaglio, mechanical and chemical methods – drypoint, etching, reserage, aquatint, scraped aquatint, and finally combined techniques, character, history, examples, and working methodology.</i> 7. <i>Conceptual sketches, selection and elaboration of sketches for a specific technique, approval, realization of the printing form, test print, control of the final appearance, printing, signing, and labeling of prints (graphic sheets).</i>							
1.5. <i>Types of Teaching Methods</i>				☐ Lectures ☐ Seminars and workshops ☐ Exercises ☐ Online education ☐ Fieldwork		☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other	
1.6. <i>Student obligations</i>							
<i>Regular attendance is required</i>							
1.7. <i>Student work monitoring</i>							
Attendance		Activity in classes		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous knowledge assessment		Report		Practical work	
Portfolio							
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
<i>Grading:</i> <i>Portfolio of works: 100%</i> <i>Evaluation:</i> <i>As part of the exercises, students will create graphic works using techniques such as drypoint, etching, aquatint, reserage, and combined techniques.</i> <i>As part of the exercises, students will evaluate the professional and creative scope of various graphic expression techniques.</i> <i>As part of the exercises, students will analyze their own and others' work.</i> <i>As part of the exercises, students will develop conceptual sketches for their own graphic projects with mentor support.</i> <i>As part of the exercises, students will apply different graphic techniques in artistic expression.</i>							
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>							
Title		Number of copies		Number of students			

1.10. Supplementary literature
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies
Student survey, self-evaluation form, etc..

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Asst. prof. Denis Jurečić, PhD	
Course title	Codes in Packaging	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>elective</i>	
Year	<i>II.</i>	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	1+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
The aim of the course is to equip students with the skills to independently design modern packaging labeling methods using various types of codes. Throughout this course, students will acquire fundamental knowledge about codes and coding in the field of packaging. They will gain insights that will enable them to categorize the functions and meanings of codes on packaging, such as protective, informational, and storage-transportation functions. The course will allow them to recognize and classify barcodes, QR codes, 2D and 3D codes, as well as RFID and infrared packaging coding systems. By mastering the course content, students will be able to compare the advantages and disadvantages of technological processes, software tools, and machines and devices used for printing codes and applying them to packaging in the packaging process.
1.2. <i>Enrollment conditions</i>
No conditions
1.3. <i>Expected learning outcomes</i>
1. Identify modern packaging labeling methods using codes (GT IU 1 / MVK IU 1). 2. Establish the advantages and disadvantages of codes on packaging (protective, informational, storage, and transport); (GT IU 5 / MVK IU 19). 3. Apply different types of packaging for barcodes, QR codes, 2D and 3D codes, RFID, and infrared packaging codes; (GT IU 2 / MVK IU 2). 4. Design methods for the quick recognition of different codes on packaging; (GT IU 7 / MVK IU 3).

5. Utilize tools for code creation, machines and devices for printing and applying codes in the form of labels on boxes in the packaging process, and connect them into a complete technological process; (GT IU 15 / MVK IU 7).								
1.4. Course content								
1. Modern methods of identifying codes in packaging. 2. Basic concepts, codes, and encoding. 3. Functions and significance of codes; protective, informational, storage, and transport. 4. Classification of codes; barcodes, or EAN codes. Printers, labels, and stickers. 5. QR codes, 2D and 3D models. The coding process. 6. RFID system. Identification through radio frequency. Remote transmission and reception of data using RFID tags - transmitters. 7. Infrared packaging system. Ultra-hidden system of pictorial and textual information on packaging. 8. Visibility, readability, and recognizability of codes on packaging. Technology for creating and printing codes. Errors in the coding system.								
1.5. Types of Teaching Methods				X Lectures ☐ Seminars and workshops X Exercises ☐ Online education ☐ Fieldwork	X Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship X Other_			
1.6. Student obligations								
Mandatory attendance at lectures and exercises, as well as active participation in online activities in the Merlin system. The conditions for access to the exam are 70% attendance in class and 70% attendance in online activities. Completion of independent work.								
1.7. Student work monitoring								
Attendance	X	Activity in classes	X	Seminar paper		Experimental work		
Written exam		Oral exam		Essay		Research		
Project	X	Continuous knowledge assessment	X	Report		Practical work	X	
Portfolio								
1.8. Assessment and evaluation of student work during classes and at the final exam.								
ASSESSMENT: 1. Independent (project) work - 60% 2. Presentation of the work - 25% 3. Online activity (Merlin) - 5% 4. Attendance in class (lectures, exercises, online) - 10% EVALUATION:								

1. In written form, explain the basic knowledge of packaging and coding, and define various types of codes on packaging by type, format, shape, and other parameters.
2. In written form and within the framework of exercises, students elaborate on their knowledge of different approaches and technologically develop codes, solve problems related to their printing, and plan new application methods for various packaging forms.
3. Within the framework of exercises, students independently apply their knowledge for detecting various types of codes with different packaging materials and, through their active participation in discussions, develop creative knowledge for generating new constructive design ideas and solutions for codes in the packaging industry.
4. Within the framework of exercises and the project assignment, students create and present their works. They argue and explain the final packaging products with applied codes, compare and comment on their own and others' works with the intention of recognizing future errors and improvements.
5. In the framework of the project assignment, students design new codes and solutions in the packaging industry. They evaluate and connect work processes, materials, and codes into a complete packaging product.

1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
Collins, D. J., Whipple N. N., Upotreba crtičnog kôda, Upute i preporuke, Edac, Zagreb, 1997.	1	
Encyclopedia of Packaging Technology, John Wiley & Sons, Inc., New York , 1997	1	
<i>EAN priručnik</i> , Hrvatska gospodarska komora CRO-EAN, Zagreb, 1992	Available online.	
Clara B. Knopf; 3D Packaging: A Creative Guide to Design & Innovation	Available online.	

1.10. Supplementary literature

1. D. Jurečić; Istraživanje čvrstoće ambalaže od valovitog kartona u kondicioniranim uvjetima, doktorski rad
2. A. Rodin; Ambalaža, distribucija i mjesto prodaje; Udruženje propangadista SR Hrvatske; Zagreb; 1984.
3. A. Rodin; *Ambalaža kao element marketinga*; Grafičar; Ludbreg; 1977.
4. Bauer, K., *Ambalaža je nezamisliva bez piktograma i ideograma*, Ambalaža br. 9, Tectus, Zagreb, 1998., str. 29.
5. Grabarić, Ž., *Generiranje linijskih kôdova u boji i neke mogućnosti korištenja u informacijskim sustavima*, magistarski rad, Fakultet organizacije i informatike, Varaždin, 1996.
6. Rodin, A., *Uloga EAN-KODA u sistemu distribucije proizvoda-primjena na ambalaži, paletama i kontejnerima*, Jugoslavensko savjetovanje, Zagreb, 1987.

1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies

1. Student survey
2. Self-evaluation form

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. prof., Vanda Jurković, PhD in Art	
Course title	Analysis of Visual Style	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	I.	
ECTS credit and teaching method	ECTS credits	2
	Number of hours (L+E+S)	1+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
The aim of the course is to master basic art methods in order to create a style. Developing a handwriting or style is an important and extensive process for every author's visual work and begins with the creation of the so-called pasticcio, by adopting a style, not a motive. Students will illustrate thematically assigned media. Students will create new creative solutions by applying historical styles and features. The success of recognizing theoretical and characteristic foundations is applied in a new context for the purpose of creating a portfolio of works. The portfolio will clearly demonstrate the skill of the author to respond to the complex requirements of future clients of visual products.
1.2. <i>Enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
1. Apply the given elements and features of characteristic styles to the visual solution 2. Understand morphostylistics in visual solutions 3. Understand syntactic stylistics and semantic stylistics in visual solutions 4. Use different illustrator methods to achieve different effects (depth, spatiality...) 5. Design visual solutions 6. Create a portfolio of author's works
1.4. <i>Course content</i>
1. The concept of style by mastering pastiche (Pasticcio, Italian: adoption of style, but not motif) on given topics 2. The concept of style by mastering pastiche on free themes 3. Thematic illustrations for default media 4. Thematic illustrations on free topics 5. Morphostylistics (style achieved through form and technique) 6. Syntactic stylistics (style for the purpose of achieving readability, credibility, suitability for saying something)

7. Semantostylistics (reading the meaning of style, i.e. the success of information transfer) 8. Caricature illustrations on given and free topics							
1.5. <i>Types of Teaching Methods</i>				☐ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork		☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other	
1.6. <i>Student obligations</i>							
Completing tasks on time. Attending the mandatory part of the exercises. Performing independent tasks that is recorded through the e-learning system. Condition for taking the exam: submitted portfolio of works.							
1.7. <i>Student work monitoring</i>							
Attendance	X	Activity in classes		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous knowledge assessment		Report		Practical work	X
Portfolio	X						
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
Presentation of work - 90% Attendance at classes - 10% Evaluation: 1. As part of the exercises, students will apply the given elements and features of characteristic styles to a visual solution through a portfolio of works 2. As part of the exercises, students will apply different illustration methods 3. Students will independently perform simple visual communication projects							
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>							
Title		Number of copies		Number of students			
R. Arnheim: Umetnost i vizualno opažanje, Univerzitet umetnosti u Beogradu, Beograd, 1981		1		1			
A. Hauser: Sociologija umjetnosti 1 i 2., Školska knjiga, Zagreb, 1986.		1		1			
M. B. Protić: Oblik i vreme, Nolit, Beograd, 1979.		1		1			
H. Focillon: Život oblika, RR, Zagreb, 1995.		1		1			

1.10. <i>Supplementary literature</i> Books and catalogs about visual arts		
1.11. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
<i>Student survey, self-evaluation form</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof., Vanda Jurković, PhD in Art	
Course title	Creating Visual Media	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	I.	
ECTS credit and teaching method	ECTS credits	2
	Number of hours (L+E+S)	1+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
The aim of the course is to perform artistic design for various graphic products. Targeted elements of the visual structure are used, with given frames as well as freer approaches. Students will design visual solutions, edit and author work based on the arrangement of optical weights, images, titles, subtitles, vignettes and other artistic interventions on the pages of given media and based on the level of color wavelengths and backgrounds (for newspapers, books of various content, magazines). Students will apply different styles, create a visual project. The goal is to create a portfolio of works.
1.2. <i>Enrollment conditions</i>
1. Perceptually display shapes with relevant graphic systems 2. Design conceptual approaches to visual representations based on expressive or idea 3. To use art in the author's practice of graphic realization from the compositional system to the individual sign 4. Show the form of different syntactic-semantic readability 5. To create original creative work 6. Apply theoretical knowledge to your own practical work
1.3. <i>Expected learning outcomes</i>
1. Edit elements of the newspaper page 2. Edit elements of the book page (scientific, fiction, sports)

3. Edit elements for the magazine, weekly, magazine page
4. Create an author's idea perceptually (through measurement) on a given background through abstract forms
5. To create an author's idea perceptually (by measuring) on a given background using figurative forms
6. Create an author's idea perceptually (through measurement) on a given background with given elements by combining wavelengths (colors)
7. Create an author's idea of a conceptual type on a given topic
8. Create an author's idea of an expressive character
9. Edit the given page using linear picture structures with illustration
10. Edit page using the presentation structures flat with the given elements
11. Edit page by means of visual structures tonally with the given elements
12. Edit page using light-shadow image structures with default elements
13. Edit page using image structures, colours and combination of images
14. Realize a composition on a given topic through stylization
15. Stylizing and making a sign

1.4. Course content

1.5. Types of Teaching Methods

- | | |
|---|--|
| ☐ Lectures
☐ Seminars
and workshops
☒ Exercises
☒ Online
education
☐ Fieldwork | ☐ Independent tasks
☐ Multimedia and
network
☐ Laboratory
☐ Mentorship
☐ Other |
|---|--|

1.6. Student obligations

Completing tasks on time. Attending the mandatory part of the exercises. Performing independent tasks that is recorded through the e-learning system. Condition for taking the exam: submitted portfolio of works.

1.7. Student work monitoring

Attendance	X	Activity in classes		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous knowledge assessment		Report		Practical work	X
Portfolio	X						

1.8. Assessment and evaluation of student work during classes and at the final exam.

Presentation of work - 90% Attendance at classes - 10% Evaluation:

1. As part of the exercises, students will create visual content as a portfolio of works
2. As part of the exercises, students will apply different visual methods
3. Students will independently perform simple visual communication projects

1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
Title	Number of copies	Number of students
<i>R. Arnheim: Umetnost i vizualno opažanje, Univerzitet umetnosti u Beogradu, Beograd 1981.</i>	1	1
<i>T. Samara: Drawing for Graphic Design, Rockport Publishers, NY, 2012.</i>	1	1
<i>G. Ambrose & P. Harris: The Fundamentals of Graphic Design, Ava Academia, 2009</i>	1	1
1.10. Supplementary literature Books and catalogs about visual arts		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof., Vanda Jurković, PhD in Art	
Course title	Structures of Visual Media	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	I.	
ECTS credit and teaching method	ECTS credits	2
	Number of hours (L+E+S)	1+0+1

COURSE DESCRIPTION
1.1. Course objectives
The aim of the course is to recognize basic facts, data and terms from the theoretical field of visuality. Students will gain insight into numerous solutions of visual materials, from classic to contemporary visual solutions (pictures, posters, graphic materials, advertisements). They will gain insight into the syntax of the visual structure, into the compositional relationships within the format. They will be able to evaluate the design solution. They will gain insight into ideas. The goal is to master concepts, adopt the principles of creating visual solutions and create ideas for your own interpretation. Students will be able to present professional information clearly and effectively to different target groups.

1.2. Enrollment conditions								
1.3. Expected learning outcomes								
1. Understand forms, concepts, facts from the field of visual syntax 2. Find relevant examples from the contemporary world of visibility 3. Interpret the collected information 4. Use the collected information to develop interpersonal skills as a team 5. Finally, apply theoretical knowledge to your own practical work 6. Self-evaluate your own needs for learning and professional development								
1.4. Course content								
1. Basic elements of presentation and visual structure of media 2. The basic law of visual perception and the Law of pregnancy 3. The line (line) as the media foundation of art and its optical value 4. Environment: historical examples of individual drawings or a reason conditioned by social and technical aspects and their meaning 5. Children's drawing and developmental forms 6. Optical weights 7. Composing, types of composition 8. Aesthetic laws 9. Layers of a visual work 10. Perspectives 11. Semantics of the visual work 12. Stylization 13. Sign and meaning 14. Functions of signs 15. Contemporary examples of media								
1.5. Types of Teaching Methods				☒ Lectures ☐ Seminars and workshops ☐ Exercises ☐ Online education ☐ Fieldwork	☒ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other ☒ Project Task			
1.6. Student obligations								
Mandatory attendance of lectures and completed independent project assignment. Completing tasks on time. Mandatory minimum 70% attendance at classes.								
1.7. Student work monitoring								
Attendance	X	Activity in classes	X	Seminar paper	X	Experimental work		
Written exam		Oral exam		Essay		Research	X	

Project		Continuous knowledge assessment		Report		Practical work	X
Portfolio							
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
Independent research, project assignment - 90% Attendance at classes - 10% Evaluation: 1. As part of the seminar work, students will find relevant examples from the contemporary world of visuality 2. As part of the seminar work, students will interpret the materials as a team 3. Through practical work, students will present a series of given facts from the course area							
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>							
Title		Number of copies		Number of students			
E.H. Gombrich: <i>The Scence of Order</i> , Cornell University Press, Ithaca, New York, 1979.		1		1			
R. Arnheim: <i>Umetnost i vizualno opažanje</i> , Univerzitet umetnosti u Beogradu, Beograd 1981.		1		1			
P. B. Meggs & A. W. Purvis: <i>Meggs History of Graphic Design</i> , John Wiley & Sons, Hoboken, New Jersey, 2012.		1		1			
K. Elam: <i>Geometry of Design, Studies in Proportion And Composition</i> ; Princeton Architectural Press, New York, 2001.		1		1			
1.10. <i>Supplementary literature</i> Books and catalogs about visual arts							
1.11. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>							
Student survey, self-evaluation form							

COURSE DESCRIPTION

GENERAL INFORMATION	
Course leader	Assoc. prof., Vanda Jurković, PhD in Art
Course title	Art in Visual Media
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>
Course status	<i>Compulsory</i>
Year	I.

ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	1+0+1

COURSE DESCRIPTION
<i>1.1. Course objectives</i>
The goal of the course is to collect relevant information, facts, data and terms for the purpose of making a design decision, i.e. performing an artistic arrangement of a graphic product. Insight into elements of visual structure and ideas will be gained, students will be able to analyze and interpret data. Through knowledge about the segments of making design decisions, about trends in the visual world, students will acquire basic knowledge for communication on the topic of visibility. The goal is to master concepts, create ideas and create your own interpretation. They will independently perform a simple visual project. Students will be able to compare solutions, see advantages and disadvantages in visual solutions.
<i>1.2. Enrollment conditions</i>
1. Analyze shapes from the field of visibility 2. Understand the basics of visibility and their use in business practice and assess which solutions are of good quality and which are inadequacies 3. Collect material from the field of the contemporary world of visibility 4. Interpret research results through written work and presentation. 5. Evaluate results and potential design flaws or improvements 6. Finally, apply theoretical knowledge to your own practical work
<i>1.3. Expected learning outcomes</i>
1. Art or formal-aesthetic analysis of selected visual media 2. Unity of form and function, level of media load 3. Analysis of a certain medium on the market and author's independence 4. Making your own solution, the concept of making decisions about individual phases (survey, examination, subsequent examination) 5. Making design decisions in segments of individual realizations - from idea to realization (drawing, printing, TV, Internet) 6. Analysis of message syntax and semantics, signaling, size and contrast 7. Analysis of possible effects (survey, examination of clarity among consumers), analysis of the scope of investment, cost of funds and the range of acceptability of solutions, the range of possible consumers 8. Design elements that make up style, unity, recognition (for serial design) 9. Visibility in public media (posters) 10. Visibility in daily newspapers, magazines 11. Visibility on TV, Internet 12. Concept of art (number of colors, drawing or photo, typographic sign, simplicity or burden of form) in relation to possible consumers 13. Types of author's idea: perceptive, technical through measurement 14. Type of author's idea: conceptual 15. Type of author's idea: expressive
<i>1.4. Course content</i>

1.5. <i>Types of Teaching Methods</i>				☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other 49 % teaching online		
1.6. <i>Student obligations</i>							
Mandatory attendance of lectures and completed independent project assignment. Completing tasks on time. Mandatory minimum 70% attendance at classes.							
1.7. <i>Student work monitoring</i>							
Attendance	X	Activity in classes		Seminar paper	X	Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous knowledge assessment		Report		Practical work	
Portfolio	X						
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
Independent research, project assignment and work presentation - 90% Attendance at classes - 10% Evaluation: 1. As part of the exercises, students will present the collected material 2. Students will present the basic concepts and ideas of the course 3. Students will submit a written paper							
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>							
Title		Number of copies		Number of students			
R. Arnheim: <i>Umetnost i vizualno opažanje, Univerzitet umetnosti u Beogradu, Beograd 1981.</i>		1		1			
A. Hashimoto & M. Clayton: <i>Visual Design Fundamentals, A Digital Approach, Third Editions, Charles River Media, USA, 2009.</i>		1		1			
G. Ambrose & P. Harris: <i>The Fundamentals of Graphic Design, Ava Academia, 2009</i>		1		1			
1.10. <i>Supplementary literature</i> Books and catalogs about visual arts							
1.11. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Katarina Knjaz, Senior Lecturer	
Course title	Physical Education and Health I	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	I.	
ECTS credit and teaching method	ECTS credits	1
	Number of hours (L+E+S)	0+30+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The goal of the course Physical Education and Health is to raise awareness of the importance of daily physical exercise, to maintain previously acquired and adopt new motor skills, and to influence anthropometric characteristics, motor and functional abilities, as well as the cognitive and conative dimensions of personality. Additionally, the course aims to improve health and work capacity, meet the need for movement, and equip students with the ability to use and spend their free time rationally and meaningfully. The course seeks to impact students' health and normal bio-psycho-social development, as well as educate them on the importance of attending classes, participating in sports or other forms of recreational physical activities throughout life. It also emphasizes the importance of proper and balanced nutrition as part of lifelong learning and general culture.</i>
1.2. <i>Enrollment conditions</i>
<i>No prior knowledge is required. The course is enrolled by all students regardless of their previously acquired motor skills and abilities.</i>
1.3. <i>Expected learning outcomes</i>
<i>Demonstrate and explain the correct execution of new elements of a particular kinesiology activity. Present technical and/or tactical elements of a particular kinesiology activity. Demonstrate and explain stretching exercises for a specific kinesiology activity. Demonstrate multiple specific warm-up exercises for a particular kinesiology activity. Demonstrate and explain strength and endurance exercises aimed at preventing musculoskeletal health issues. Recommend kinesiology activities to peers and explain the benefits of physical exercise.</i>

1.4. Course content								
As part of the course schedule, students, under the supervision of the course instructor or an external associate, can participate in various kinesiology activities offered during the current academic year. The activities are adjusted each year based on available resources and working conditions. The most common activities students can participate in include: basketball, futsal, volleyball, rowing, badminton, hiking tours, group fitness programs, archery, bowling...								
1.5. Types of Teaching Methods				☐ Lectures ☐ Seminars and workshops ☒ Exercises ☐ Online education ☐ Fieldwork	☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other			
1.6. Student obligations								
By regularly attending classes (with a minimum attendance of 80% of the exercises) and actively participating in the lessons, the student will successfully fulfill the course requirements. The student is required to attend classes in appropriate sports clothing and footwear. There is no exam.								
1.7. Student work monitoring								
Attendance	X	Activity in classes	X	Seminar paper		Experimental work		
Written exam		Oral exam		Essay		Research		
Project		Continuous knowledge assessment		Report		Practical work		
Portfolio								
1.8. Assessment and evaluation of student work during classes and at the final exam.								
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course								
Title		Number of copies		Number of students				
1.10. Supplementary literature								
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies								
Student survey, self-evaluation form, etc..								

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Katarina Knjaz, Senior Lecturer	
Course title	Physical Education and Health II	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	I.	
ECTS credit and teaching method	ECTS credits	1
	Number of hours (L+E+S)	0+30+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The goal of the course Physical Education and Health is to raise awareness of the importance of daily physical exercise, to maintain previously acquired and adopt new motor skills, and to influence anthropometric characteristics, motor and functional abilities, as well as the cognitive and conative dimensions of personality. Additionally, the course aims to improve health and work capacity, meet the need for movement, and equip students with the ability to use and spend their free time rationally and meaningfully. The course seeks to impact students' health and normal bio-psycho-social development, as well as educate them on the importance of attending classes, participating in sports or other forms of recreational physical activities throughout life. It also emphasizes the importance of proper and balanced nutrition as part of lifelong learning and general culture.</i>
1.2. <i>Enrollment conditions</i>
<i>No prior knowledge is required. The course is enrolled by all students regardless of their previously acquired motor skills and abilities.</i>
1.3. <i>Expected learning outcomes</i>
<i>Demonstrate and explain the correct execution of new elements of a particular kinesiology activity. Present technical and/or tactical elements of a particular kinesiology activity. Demonstrate and explain stretching exercises for a specific kinesiology activity. Demonstrate multiple specific warm-up exercises for a particular kinesiology activity. Demonstrate and explain strength and endurance exercises aimed at preventing musculoskeletal health issues. Recommend kinesiology activities to peers and explain the benefits of physical exercise.</i>
1.4. <i>Course content</i>
<i>As part of the course schedule, students, under the supervision of the course instructor or an external associate, can participate in various kinesiology activities offered during the current academic year. The activities are adjusted each year based on available resources and working conditions. The most common activities students can participate in include: basketball, futsal, volleyball, rowing, badminton, hiking tours, group fitness programs, archery, bowling...</i>

1.5. <i>Types of Teaching Methods</i>				☐ Lectures ☐ Seminars and workshops X ☒ Exercises ☐ Online education ☐ Fieldwork	☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_
1.6. <i>Student obligations</i>					
By regularly attending classes (with a minimum attendance of 80% of the exercises) and actively participating in the lessons, the student will successfully fulfill the course requirements. The student is required to attend classes in appropriate sports clothing and footwear. There is no exam.					
1.7. <i>Student work monitoring</i>					
Attendance	X	Activity in classes	X	Seminar paper	Experimental work
Written exam		Oral exam		Essay	Research
Project		Continuous knowledge assessment		Report	Practical work
Portfolio					
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>					
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>					
Title		Number of copies		Number of students	
1.10. <i>Supplementary literature</i>					
1.11. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>					
Student survey, self-evaluation form, etc..					

COURSE DESCRIPTION

GENERAL INFORMATION	
Course leader	Katarina Knjaz, Senior Lecturer
Course title	Physical Education and Health III
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>
Course status	<i>Compulsory</i>
Year	II.

ECTS credit and teaching method	ECTS credits	1
	Number of hours (L+E+S)	0+30+0

COURSE DESCRIPTION		
1.1. Course objectives		
<i>The goal of the course Physical Education and Health is to raise awareness of the importance of daily physical exercise, to maintain previously acquired and adopt new motor skills, and to influence anthropometric characteristics, motor and functional abilities, as well as the cognitive and conative dimensions of personality. Additionally, the course aims to improve health and work capacity, meet the need for movement, and equip students with the ability to use and spend their free time rationally and meaningfully. The course seeks to impact students' health and normal bio-psycho-social development, as well as educate them on the importance of attending classes, participating in sports or other forms of recreational physical activities throughout life. It also emphasizes the importance of proper and balanced nutrition as part of lifelong learning and general culture.</i>		
1.2. Enrollment conditions		
<i>No prior knowledge is required. The course is enrolled by all students regardless of their previously acquired motor skills and abilities.</i>		
1.3. Expected learning outcomes		
<i>Demonstrate and explain the correct execution of new elements of a particular kinesiology activity. Present technical and/or tactical elements of a particular kinesiology activity. Demonstrate and explain stretching exercises for a specific kinesiology activity. Demonstrate multiple specific warm-up exercises for a particular kinesiology activity. Demonstrate and explain strength and endurance exercises aimed at preventing musculoskeletal health issues. Recommend kinesiology activities to peers and explain the benefits of physical exercise.</i>		
1.4. Course content		
<i>As part of the course schedule, students, under the supervision of the course instructor or an external associate, can participate in various kinesiology activities offered during the current academic year. The activities are adjusted each year based on available resources and working conditions. The most common activities students can participate in include: basketball, futsal, volleyball, rowing, badminton, hiking tours, group fitness programs, archery, bowling...</i>		
1.5. Types of Teaching Methods	☐ Lectures ☐ Seminars and workshops ☒ Exercises ☐ Online education ☐ Fieldwork	☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_
1.6. Student obligations		

<i>By regularly attending classes (with a minimum attendance of 80% of the exercises) and actively participating in the lessons, the student will successfully fulfill the course requirements. The student is required to attend classes in appropriate sports clothing and footwear. There is no exam.</i>							
1.7. Student work monitoring							
Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous knowledge assessment		Report		Practical work	
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
1.10. Supplementary literature							
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies							
Student survey, self-evaluation form, etc..							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Katarina Knjaz, Senior Lecturer	
Course title	Physical Education and Health IV	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	II.	
ECTS credit and teaching method	ECTS credits	1
	Number of hours (L+E+S)	0+30+0

COURSE DESCRIPTION
1.1. Course objectives

<i>The goal of the course Physical Education and Health is to raise awareness of the importance of daily physical exercise, to maintain previously acquired and adopt new motor skills, and to influence anthropometric characteristics, motor and functional abilities, as well as the cognitive and conative dimensions of personality. Additionally, the course aims to improve health and work capacity, meet the need for movement, and equip students with the ability to use and spend their free time rationally and meaningfully. The course seeks to impact students' health and normal bio-psycho-social development, as well as educate them on the importance of attending classes, participating in sports or other forms of recreational physical activities throughout life. It also emphasizes the importance of proper and balanced nutrition as part of lifelong learning and general culture.</i>							
1.2. Enrollment conditions							
<i>No prior knowledge is required. The course is enrolled by all students regardless of their previously acquired motor skills and abilities.</i>							
1.3. Expected learning outcomes							
<i>Demonstrate and explain the correct execution of new elements of a particular kinesiology activity.</i> <i>Present technical and/or tactical elements of a particular kinesiology activity.</i> <i>Demonstrate and explain stretching exercises for a specific kinesiology activity.</i> <i>Demonstrate multiple specific warm-up exercises for a particular kinesiology activity.</i> <i>Demonstrate and explain strength and endurance exercises aimed at preventing musculoskeletal health issues.</i> <i>Recommend kinesiology activities to peers and explain the benefits of physical exercise.</i>							
1.4. Course content							
<i>As part of the course schedule, students, under the supervision of the course instructor or an external associate, can participate in various kinesiology activities offered during the current academic year. The activities are adjusted each year based on available resources and working conditions. The most common activities students can participate in include: basketball, futsal, volleyball, rowing, badminton, hiking tours, group fitness programs, archery, bowling...</i>							
1.5. Types of Teaching Methods				☐ Lectures ☐ Seminars and workshops ☒ Exercises ☐ Online education ☐ Fieldwork		☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_	
1.6. Student obligations							
<i>By regularly attending classes (with a minimum attendance of 80% of the exercises) and actively participating in the lessons, the student will successfully fulfill the course requirements. The student is required to attend classes in appropriate sports clothing and footwear. There is no exam.</i>							
1.7. Student work monitoring							
Attendance	X	Activity in classes	X	Seminar paper		Experimental work	

Written exam		Oral exam		Essay		Research	
Project		Continuous knowledge assessment		Report		Practical work	
Portfolio							
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>							
Title		Number of copies		Number of students			
1.10. <i>Supplementary literature</i>							
1.11. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>							
Student survey, self-evaluation form, etc..							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Katarina Knjaz, Senior Lecturer	
Course title	Physical Education and Health V	
Study programme	Undergraduate university study programme Multimedia and Visual Communications	
Course status	Elective	
Year	III.	
ECTS credit and teaching method	ECTS credits	1
	Number of hours (L+E+S)	0+30+0

COURSE DESCRIPTION
1.1. Course objectives
<i>The objectives of the course Physical Education and Health V is to raise awareness of the importance of daily physical exercise, to maintain previously acquired and adopt new motor skills, and to influence anthropometric characteristics, motor and functional abilities, as well as the cognitive and conative dimensions of personality. Additionally, the course aims to improve health and work capacity, meet the need for movement, and equip students with the ability to use and spend their free time rationally and meaningfully. The objective of the course is to impact the health and normal bio-psycho-social development of students, as well as to enable student-athletes to continue their sports careers by participating in university competitions.</i>

1.2. Enrollment conditions								
The prerequisite for enrolling in the course is participation in sports sections during the first two years of the undergraduate university program, as well as participation in university competitions.								
1.3. Expected learning outcomes								
Demonstrate and explain the correct execution of new elements of a particular kinesiology activity. Present the technical and/or tactical elements of a particular kinesiology activity. Apply acquired motor skills in situational conditions (competitions). Demonstrate and explain stretching exercises for a specific kinesiology activity. Demonstrate multiple specific warm-up exercises for a particular kinesiology activity. Demonstrate and explain strength and endurance exercises for the purpose of preventing musculoskeletal health issues.								
1.4. Course content								
As part of the course schedule, students, under the supervision of the course instructor or an external associate, can engage in various kinesiology activities offered during the current academic year. The activities are adjusted each year based on available resources and working conditions. The most common sports activities organized as sports sections include: futsal, basketball, volleyball, handball, rowing, table tennis, certain athletic disciplines, swimming...								
1.5. Types of Teaching Methods				☐ Lectures ☐ Seminars and workshops ☒ Exercises ☐ Online education ☐ Fieldwork	☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_			
1.6. Student obligations								
Polaganja ispita nema. Redovitim sudjelovanjem u trenažnom procesu i sudjelovanjem na sveučilišnim natjecanjima student će uspješno odraditi obavezu prema kolegiju.								
1.7. Student work monitoring								
Attendance	X	Activity in classes	X	Seminar paper		Experimental work		
Written exam		Oral exam		Essay		Research		
Project		Continuous knowledge assessment		Report		Practical work		
Portfolio								
1.8. Assessment and evaluation of student work during classes and at the final exam.								

1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
Title	Number of copies	Number of students
1.10. Supplementary literature		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form, etc..		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Tajana Koren Ivančević, PhD.	
Course title	Multimedia content management	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>elective</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. Course objectives
<i>The goal of the course is to train students to program graphics in different programming languages. Students are introduced to technologies for image, video, and sound manipulation. Pixel and vector graphics are managed through different programming languages. Students get to know how to break down an image into its constituent parts and replace them with vector shapes or letter characters. The programming languages Postscript, Python, Processing, and their capabilities and limitations are compared. Reading and printing of various document formats. Export to raster graphics, export to pdf, video export. Complex methods of creating multimedia content: stochastics and noise and defining the basics of fractal graphics. Application in virtual reality simulation. Application of trigonometric functions in image and animation creation.</i>
1.2. Enrollment conditions
1.3. Expected learning outcomes
<i>Differentiate programming languages and their possibilities and disadvantages Choose the appropriate programming language with regard to the desired result Use different programming languages to manage selected multimedia content Use a software solution for a specific problem</i>

1.4. Course content							
1. Getting to know the programming environment of the highly structured programming language Processing as a tool for the synthesis of multimedia content. The program environment is intended for basic and advanced image, video, sound manipulation. Advanced techniques include manipulating 3D graphics, visualizing large amounts of data, importing and exporting different document formats, and creating interactive applications and user interfaces. 2. The basics of working in Processing through programming the forms of vector and raster graphics, colors and typography. 3. Retrieving and modifying the parameters of the basic shapes. Decomposing the image into its component parts and replacing them with vectors or text. 4. Animation and interactive animation. Communication with the user through mouse movements. Transformations through interaction with the user. 5. Reading and printing of different document formats. Export to raster graphics, export to pdf, video export. 6. Complex methods of creating multimedia content: stochastics and noise and defining the basics of fractal graphics and their application in reality simulation. 7. Application of trigonometric functions in image and animation creation, interactive objects: attractors. Interactive video and sound elements. Program manipulation of video and audio. 8. Basics of 3D graphics programming and animating perspective and lighting. 9. Introduction of the programming language Postscript. 10. Programming graphics of vector and pixel graphics. 11. Getting to know the Python programming language. 12. Graphics programming through Python. 13. Comparison and analysis of the possibilities and disadvantages of the mentioned programming languages.							
1.5. Types of Teaching Methods				☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork		☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other	
1.6. Student obligations							
Mandatory attendance at lectures and completion of independent tasks according to instructions. Students complete an assignment independently each week according to the instructions for each unit and submit their solutions through the e-learning system. Condition for taking the exam: minimum attendance at lectures 30%, 80% weekly independent assignments							
1.7. Student work monitoring							
Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam		Oral exam	X	Essay		Research	
Project		Continuous knowledge assessment	X	Report		Practical work	X

Portfolio							
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
<i>Evaluation:</i> <i>In the framework of project tasks and exercises, students distinguish between programming languages and their possibilities and disadvantages.</i> <i>As part of the project tasks, students choose the appropriate programming language with regard to the desired result.</i> <i>As part of the project assignments, students use different programming languages to manage selected multimedia content.</i> <i>As part of the project tasks, students use a software solution for a specific issue.</i> <i>Project tasks within exercises 100%</i> <i>Colloquiums 100% (if 80% of the project tasks have been completed)</i> <i>Colloquium 1 33%</i> <i>Colloquium 2 33%</i> <i>Colloquium 3 33%</i>							
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>							
<i>Title</i>		<i>Number of copies</i>		<i>Number of students</i>			
Reas, C., Fry, B. (2007) Processing:a programming handbook for visual designers and artists, The MIT Press Cambridge, Massachusetts, ISBN 978-0-262-18262-1							
Reas, C., Fry, B. (2010) Getting started with Processing, O'Reilly Media, Inc., ISBN: 978-1-449-37980-3							
Greenberg, I. (2007) Processing Creative Coding and Computational Art, Apress Media, NewYork, ISBN-13: 978-1-59059-617-3							
https://vilko.ziljak.hr/PostscriptKnjiga.pdf							
Leo Budin, Predrag Brođanac, Zlatka Markučić, Smiljana Perić, Dejan Škvorc, Magdalena Babić, Računalno razmišljanje i programiranje u Pythonu, Element, 2017.							
1.10. <i>Supplementary literature</i>							
1.11. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>							
<i>Student survey, self-evaluation form, etc..</i>							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Tajana Koren Ivančević, PhD.	
Course title	Web animations	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The aim of the course is to train students to program 2D and 3D animations on the web by implementing various web technologies. Students are introduced to new graphic elements in HTML. The CANVAS element is introduced. Its capabilities, advantages and disadvantages compared to CSS animations of HTML elements are introduced. SVG graphics are introduced and the possibilities of combining SVG as an XML technology with HTML and CSS technologies are shown. WebGL is introduced. Students are trained to distinguish and select technology for the selected type and method of animation. By combining elements for creating HTML graphics, students will be able to create demanding 3D animations.</i>
1.2. <i>Enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
<i>Compare technologies for creating animations on the web</i> <i>Classify technologies for creating graphics on the web</i> <i>Use different technologies to create web animations</i> <i>Analyze animations, transformations and transitions in different web technologies</i>
1.4. <i>Course content</i>
<i>1. Following the Basics of Web Technologies course, knowledge is deepened and more demanding ways of animating HTML elements through CSS are introduced. Pseudo elements and pseudo classes are introduced.</i> <i>2. HTML Canvas is introduced. Comparison of the animation possibilities of Canvas elements in relation to other elements animated through CSS.</i> <i>3. Linked and simultaneous animations and multiple animations of an individual element are processed. Animating text and images. Demanding 3D animations.</i> <i>4. SVG technology is introduced. Basic SVG elements and shapes.</i>

5. Syntax of SVG technology, comparison of the use of CSS technology with HTML and SVG. Nesting SVG elements in HTML. Introducing animations of SVG elements through SVG itself and through CSS, possibilities and differences.

6. Drawing SVG shapes through animation. Starting animations using other elements. Moving text, images and other elements. Controlling animation phases.

7. Introducing 2D SVG elements into HTML elements and achieving 3D transformations and animations. Creation of interactive animated graphics.

8. Getting to know WebGL technology.

9. Creation of graphic elements for the web using WebGL.

10. Animations of elements using WebGL

1.5. Types of Teaching Methods

☒ Lectures	☒ Independent tasks
☐ Seminars and workshops	☒ Multimedia and network
☒ Exercises	☐ Laboratory
☒ Online education	☐ Mentorship
☐ Fieldwork	☐ Other

1.6. Student obligations

Mandatory attendance at lectures and completion of independent tasks according to instructions. Students complete an assignment independently each week according to the instructions for each unit and submit their solutions through the e-learning system.

Condition for taking the exam: minimum attendance at lectures 30%, 80% weekly independent assignments

1.7. Student work monitoring

Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam		Oral exam	X	Essay		Research	
Project		Continuous knowledge assessment	X	Report		Practical work	X
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Evaluation:

As part of the project assignments, students will compare technologies for creating animations on the web

As part of the project tasks, students classify technologies for creating graphics on the web

As part of the project assignments, students will use different technologies to create animations on the web

As part of the project tasks, students will analyze animations, transformations and transitions in different web technologies

Project tasks within exercises 100%

Colloquiums 100% (if 80% of the project tasks have been completed)

Colloquium 1 33%

Colloquium 2 33%

1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
Chinnathambi, K.: Creating Web Animations: Bringing Your UIs to Life, 2017, ISBN-13: 978-1491957516		
Drasner, S.: SVG Animations: From Common UX Implementations to Complex Responsive Animation, 2017, ISBN-13: 978-1491939703		
Weyl, E.: Transitions and Animations in CSS: Adding Motion with CSS, 2016, ISBN-13: 978-1491929889		
http://w3schools.com		
1.10. Supplementary literature		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form, etc..		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Asst. Prof. Dorotea Kovačević, PhD	
Course title	Digital Illustration Elements	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	1+2+0

COURSE DESCRIPTION
1.1. Course objectives
The objective of this course is to prepare students with the necessary skills for the effective use of digital illustration elements across various types of graphic media. The course provides foundational knowledge that enables students to develop the ability to design diverse types of digital illustrations, adjust the complexity of visual form to specific context, and create authentic illustrative solutions in accordance with the requirements of the graphic medium and its reproduction limitations. After successfully completing the

course, students will be able to assess the suitability of different structural elements in conveying graphically designed messages to a target audience, and use visual language to present their own solutions that are based on illustrative content.							
1.2. Enrollment conditions							
Completion of the course Creating Visual Media							
1.3. Expected learning outcomes							
1. Sketch a hierarchy of illustration elements within the given media format. 2. Apply aesthetic principles in the design of digital illustrative content. 3. Generate a conceptual solution for a graphic medium based on illustration elements. 4. Demonstrate the use of illustration elements in a multimedia context. 5. Present illustrative content in a manner appropriate to the specifications of the target audience.							
1.4. Course content							
1. Visual Language and Hierarchy of Visual Information 2. Principles of Illustrative Design: Graphic Design Principles 3. Principles of Illustrative Design: Visual Perception 4. Designing Illustration Elements: Concept Development 5. Designing Illustration Elements: Refinement 6. Designing Illustration Elements: Digitalization 7. Qualities of Illustration Elements: Suitability for the Target Audience 8. Qualities of Illustration Elements: Content Dynamics and Specifics 9. Characteristics of Illustrative Design for Print 10. Characteristics of Illustrative Design for Multimedia Contexts							
1.5. Types of Teaching Methods				☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork		☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☒	
1.6. Student obligations							
Attending lectures and exercises. Completing each exercise assignment in the computer lab with mandatory submission of the assignment in the e-learning system. Students are required to attend of at least 75% of lectures and 75% of practical exercises. They are also required to complete all assignments on time.							
1.7. Student work monitoring							
Attendance	X	Activity in classes		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous knowledge assessment		Report		Practical work	X
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.		
Students' final grade is based on the assessment of all exercise assignments (100%). Students' evaluation is based on the following: 1. As part of practical assignments during exercises, students apply digital and traditional sketching techniques to depict the hierarchy of visual information in a given media environment. 2. During exercises, students verbally explain the application of aesthetic principles in the assignments of creating illustrative content. 3. As part of practical assignments during exercises, students design a segment of the assigned graphic medium using illustration elements. 4. As part of practical assignments during exercises, students apply illustration elements to present visual content in a multimedia context. 5. As part of practical tasks during exercises, students present various types of illustration elements and provide a written analysis of their suitability to the characteristics of the target audience.		
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
Fundamentals of character design: How to create engaging characters for illustration, animation and visual development, Randy Bishop (2020)	2	20
Design Elements: Form and Space, 2nd Revised edition, Puhalla D. (2020)	Available in digital format	20
Design Basics, Stephen Pentak and David A. Lauer (2015)	Available in digital format	20
1.10. Supplementary literature		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form.		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Asst. Prof. Dorotea Kovačević, PhD	
Course title	Infographic Design	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	II.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	1+0+1

COURSE DESCRIPTION							
1.1. <i>Course objectives</i>							
The objective of this course is to prepare students with the skills for systematically analyzing textual, numerical, and visual information, as well as for designing infographics within printed and digital media. Students will acquire knowledge of basic and advanced methods for creating infographics using adequate visual elements and will be able to demonstrate the application of aesthetic principles in this field. Additionally, they will be able to analyze infographics in the context of effective visual communication. Through practical assignments involving the sketching of designs, students will develop the ability to design information graphics in accordance with the complexity of the data and the target audience.							
1.2. <i>Enrollment conditions</i>							
Ability to use graphic design software of choice.							
1.3. <i>Expected learning outcomes</i>							
1. Analyze the suitability of color and other visual elements for information presentation. 2. Select effective visualization forms for diverse categories of information. 3. Demonstrate the application of aesthetic principles in the context of infographics. 4. Sketch different types of infographics in accordance with the specific characteristics of the target audience.							
1.4. <i>Course content</i>							
1. Infographic as a Form of Visual Communication 2. Visual Elements in Infographic Design 3. Aesthetic Principles in Infographics 4. Infographics Design Methods 5. The Role of Images in Infographic Design 6. The Role of Text in Infographic Design 7. The Role of Visual Perception in Infographic Comprehension 8. Interpreting Infographic based on User Characteristics 9. Digital Infographics							
1.5. <i>Types of Teaching Methods (</i>				☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork		☒ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☒	
1.6. <i>Student obligations</i>							
Attending lectures and exercises. Preparing for the seminars and completing each task with mandatory submission of the completed task in the e-learning system. Students are required to attend of at least 75% of lectures and 75% of seminars. They are also required to complete all the tasks and a project on time.							
1.7. <i>Student work monitoring</i>							
Attendance	X	Activity in classes		Seminar paper		Experimental work	

Written exam		Oral exam		Essay		Research	
Project	X	Continuous knowledge assessment		Report		Practical work	X
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Students’ final grade is based on the assessment of all tasks (60%) and the project (40%). Students’ evaluation is based on the following: 1. In the form of a written report, which is a part of the project, students analyze the suitability of structural visual elements used in the infographic they sketch. 2. In the form of a written report, which is a part of the practical task, students describe the effectiveness of their infographics sketches that vary by purpose and visual form. 3. In the form of an image and written report, both parts of the project, students apply aesthetic principles in their own solutions for the given infographic. 4. Through practical tasks conducted during seminars, students sketch various solutions for information graphics in accordance with the specifics of different demographic groups (children, elderly, and foreigners).							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
Krum, Randy: Cool infographics: Effective communication with data visualization and design, Wiley, 2014.		2		20			
Ware, Colin: Visual thinking for design, Elsevier/Morgan Kaufmann, 2008.		5		20			
Weinschenk, Susan: 100 Things Every Designer Needs to Know About People, New Riders Pub, 2011		Available in digital format		20			
1.10. Supplementary literature							
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies							
Student survey, self-evaluation form.							

COURSE DESCRIPTION

GENERAL INFORMATION	
Course leader	Asst. Prof. Dorotea Kovačević, PhD asst. prof. Marina Vukoje, PhD
Course title	Principles of Eco-Design
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>
Course status	<i>Compulsory</i>

Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	1+0+2

COURSE DESCRIPTION		
1.1. Course objectives		
<i>The aim of this course is to equip students with the ability to independently apply eco-design principles in the creation of conceptual solutions for selected graphic products. Throughout the course, students will acquire knowledge in the fields of environmental protection and graphic design theory, necessary for making decisions on the choice of shapes, materials, and visual elements that communicate sustainability without sacrificing aesthetic value. Upon completing the course, students will be able to independently propose suitable design approaches to develop more environmentally sustainable graphic products and present the sustainability of these products to a wider audience through unique graphic solutions.</i>		
1.2. Enrollment conditions		
1.3. Expected learning outcomes		
1. Identify the advantages and disadvantages of graphic materials in the context of sustainability. 2. Select design elements for visual solutions in accordance with sustainable design guidelines. 3. Apply environmental sustainability guidelines in the creation of conceptual solutions for graphic products. 4. Adapt graphic solutions to sustainability principles. 5. Demonstrate the environmentally sustainable value of products through original visual solutions.		
1.4. Course content		
1. Eco-design as a response to environmental challenges. 2. Professional terminology in the field of eco-design. 3. Legal and normative foundations of eco-design: EU Circular Economy Plan, Ecodesign Regulation, Packaging Regulation, Waste Management Act (AT), REACH, Sustainable Development Goals (SDG), International Organization for Standardization (ISO 14040/14044/14062), EMAS, Extended Producer Responsibility (EPR), Corporate Social Responsibility (CSR). 4. Eco-design strategies and guidelines: Design for dematerialization. 5. Eco-design strategies and guidelines: Design for detoxification. 6. Eco-design strategies and guidelines: Design for revalorization. 7. Eco-design strategies and guidelines: Design for protection and restoration of resources. 8. Communicating sustainability through color. 9. Communicating sustainability through graphic symbols. 10. Communicating sustainability through materials. 11. Nature as an inspiration for new technological approaches. 12. Application of aesthetic principles in sustainable design. 13. User perception of sustainable design in graphic products.		
1.5. Types of Teaching Methods	☒ Lectures ☒ Seminars and workshops	☒ Independent tasks

				☐ Exercises ☒ Online education ☐ Fieldwork	☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other ____		
1.6. Student obligations							
<i>Mandatory attendance of lectures and seminars.</i> <i>Preparation and independent work at home, with results evaluated within seminars.</i> <i>Exam eligibility requirement: attendance at a minimum of 50% of lectures and 80% of seminars, completion of all independent tasks and the project assignment by the defined deadline, and presentation held within the seminar.</i>							
1.7. Student work monitoring							
Attendance	X	Activity in classes		Seminar paper	X	Experimental work	
Written exam		Oral exam		Essay		Research	
Project	X	Continuous knowledge assessment	X	Report		Practical work	X
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
<i>Grading:</i> <i>Project assignment within the seminar – 70%</i> <i>Presentation within the seminar – 10%</i> <i>Continuous knowledge assessment (midterm) – 20%</i> <i>Evaluation:</i> <i>In the written part of the project assignment, explain the advantages and disadvantages of the materials selected for the conceptual solution of the graphic product.</i> <i>In the practical part of the project assignment, use visual message elements in accordance with eco-design guidelines, considering user perception.</i> <i>In the practical part of the project assignment, create a conceptual solution for a sustainable graphic product.</i> <i>In the concluding part of the project assignment, propose production in accordance with the principles of socially responsible graphic practices.</i> <i>Through the presentation of the original visual solution within the seminar, argue for the ecological value of the product orally.</i>							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
EcoDesign and sustainability II : social perspectives and sustainability assessment / editors Yusuke Kishita ... [et al.]. Singapore : Springer, 2021.		3					

<i>Galanakis, Charis M. ; Innovation strategies in environmental science / edited by Charis M. Galanakis. Amsterdam : Elsevier, 2020. (odabrana poglavlja)</i>	2	
Bullock, Adrian: The Green Design and Print Production Handbook / Adrian Bullock & Meredith Walsh. Cincinnati, OH : How books, cop. 2013.	2	
<i>Rosner Klimchuk, Marianne: Packaging design : successful product branding from concept to shelf / Marianne Rosner Klimchuk and Sandra A. Krasovec. New Jersey : J. Willey & Sons, 2012.</i>	4	
Jedlička, Wendy; Packaging sustainability : tools, systems and strategies for innovative package design / Wendy Jedlička. Hoboken : Wiley, 2009.	2	
Dougherty, Brian: Green graphic design / Brian Dougherty. New York : Allworth Press, 2008	2	
1.10. Supplementary literature <i>Joseph Fiksel, Design for Environment A Guide to Sustainable Product Development. The McGraw-Hill, 2009 (dostupno u pdf formatu)</i> <i>Carlo Vezzoli, Ezio Manzini; Design for Environmental Sustainability, Springer, Verlag London, 2008. (dostupno u pdf formatu)</i>		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
<i>Student survey, self-evaluation form, etc.</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Rahela Kulčar, PhD	
Course title	Experimental and Analogue Photography	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	<i>II.</i>	
	ECTS credits	3

ECTS credit and teaching method	Number of hours (L+E+S)	1+1+1
---------------------------------	-------------------------	-------

COURSE DESCRIPTION		
1.1. Course objectives		
<i>The aim of the course is to encourage students to explore and apply various experimental techniques in black-and-white analogue photography. The course will facilitate the development of practical skills for working in the darkroom, applying techniques for creating photographs without the use of a camera, and familiarizing students with light-sensitive materials and emulsions. By mastering the course, students will be equipped for independent work and research in the field of experimental photography and will develop the ability to integrate different artistic techniques in the creation of hybrid photographic works.</i>		
1.2. Enrollment conditions		
1.3. Expected learning outcomes		
<i>Critically analyze key experimental techniques and works of prominent photographers in the history of black-and-white analogue photography and their influence on contemporary photographic practice.</i> <i>Apply various experimental techniques in black-and-white analogue photography.</i> <i>Create photographs without the use of a camera, utilizing different light-sensitive materials and emulsions.</i> <i>Design the integration of different artistic techniques in the creation of hybrid photographic works.</i> <i>Justify the selection of works for a public exhibition.</i>		
1.4. Course content		
<i>Introduction to Analogue Black-and-White Photography.</i> <i>History of Experimental Techniques, Overview of Notable Photographers and Their Works. Basics of Exposure Elements (Exposure Triangle; Reciprocity Law; Depth of Field; Capturing Moving Objects; Focal Length).</i> <i>Materials and Equipment (Various Types of Films and Light-Sensitive Materials; Darkroom Equipment).</i> <i>Fundamentals of Darkroom Work (Developing Black-and-White Film Process).</i> <i>The Process of Creating Black-and-White Photographs in the Darkroom.</i> <i>Selective Lighting Technique (Varying Density of Darkening and Contrast).</i> <i>Chemical Manipulations in Photography (Chemigrams and Chemograms).</i> <i>Introduction and Demonstration of Alternative Photographic Techniques ("Camera-less Photography").</i> <i>Experimental Emulsions – Using Different Light-Sensitive Emulsions.</i> <i>Image Transfer and Alternative Processes: Image Transfer Processes for Cyanotype and Salt Print, Combining Analog and Digital Methods.</i> <i>Presentation and Exhibition of Works: Preparing Works for Exhibition, Organizing and Participating in the Final Exhibition.</i>		
1.5. Types of Teaching Methods	☒ Lectures	☒ Independent tasks

				☒ Seminars and workshops ☐ Exercises ☐ Online education ☐ Fieldwork	☐ Multimedia and network ☒ Laboratory ☐ Mentorship ☐ Other		
1.6. Student obligations							
<i>Mandatory attendance at lectures, seminars, and laboratory exercises.</i> <i>Students work on their photographs in the laboratory every other week.</i> <i>In the seminar, they present various experimental techniques and works of notable photographers, engage in discussions, and provide feedback on each other's presentations.</i> <i>Prerequisite for exam participation: Mandatory submission of photographs, independent projects assigned during the semester, and seminar presentations.</i>							
1.7. Student work monitoring							
Attendance	x	Activity in classes	x	Seminar paper	x	Experimental work	
Written exam		Oral exam		Essay		Research	
Project	x	Continuous knowledge assessment		Report		Practical work	x
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
<i>Participation in lectures – 10%</i> <i>Quality of practical exercises in the darkroom, developing photographs– 20%</i> <i>Quality and originality of project works demonstrating the application of experimental techniques and creative approaches – 30%</i> <i>Project assignments – 20%</i> <i>Seminar paper – 20%</i> <i>Evaluation:</i> <i>Students will present a seminar that critically analyzes key experimental techniques and works of notable photographers in the history of black-and-white analogue photography.</i> <i>Students will create thematically diverse analogue black-and-white photographs that demonstrate their understanding and application of various experimental techniques in black-and-white analogue photography.</i> <i>Students will produce photographs using alternative photographic techniques (camera-less) and include a brief description of the materials and techniques used.</i> <i>Students will create one hybrid photography that demonstrates the integration of different artistic techniques.</i> <i>Students will prepare and organize their works for an exhibition at the faculty and actively participate in it with a group of colleagues.</i>							

1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Camera: a history of photography from daguerreotype to digital / Todd Gustavson</i>	1	
<i>New dimensions in photo processes: a step-by-step manual for alternative techniques / Laura Blacklow</i>	1	
<i>Black & White photography / Glenn Rand, David Litschel</i>	1	
1.10. <i>Supplementary literature</i> <i>Teaching material prepared by the course teacher and available online</i>		
1.11. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
<i>Student Survey, Self-Evaluation Form.</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Rahela Kulčar, PhD	
Course title	Color Theory and Application in Visual Communication	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	<i>III.</i>	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+1+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The goals of the course are to provide students with a thorough understanding of color theory, including basic concepts, relationships between colors, and the impact of lighting on color perception. Students will explore the physiological and psychological aspects of color perception as well as cultural variations. The course covers historical and contemporary color theories in design, the application of color in marketing, branding, and digital and print media. Students will develop skills in color composition, understanding contrast and harmony, and applying color in typography and multimedia, with an emphasis on effective visual communication.</i>

1.2. Enrollment conditions		
None		
1.3. Expected learning outcomes		
1. Explain the basic concepts of color theory, color schemes, and the relationships between colors. 2. Explain the physiological processes of color perception and the impact of light and other factors on color experience. 3. Analyze the psychological influence of colors on emotions and behavior, as well as cultural variations in color perception. 4. Apply historical and contemporary color theories in art and design to their own design projects. 5. Apply theoretical knowledge of color perception, light, and substrates to create harmonious color combinations and effective visual communication in the presentation of graphic elements and multimedia.		
1.4. Course content		
1. Physiological Basis of Color Perception 2. Emotional and Psychological Influence of Colors; Cultural Variations in Color Perception 3. Tests for Determining Color Vision Deficiencies 4. Intuitive Color Systems (Munsell, NCS) 5. The Impact of Light on Color Experience (Standard Types of Lighting vs. Light Sources, CRI Index, Metamerism, Color Variability, Color Temperature Correlation (CCT)) 6. The Influence of Substrate Type on the Psychophysical Characteristics of Color (Impact of Different Textures and Materials on Color Perception) 7. Introduction to Instrumental Color Measurement and Visual Evaluation 8. CIELAB Color System 9. Color Theories in Design 10. Colors in Visual Communications (The Meaning of Colors in Marketing and Advertising Campaigns; Colors and Branding: Creating Brand Identity Through Colors; Psychological Effects of Colors in Digital and Print Media) 11. Color Interaction (Simultaneous and Successive Contrast, Color Memory) 12. The Impact of Color on Readability and Perception of Graphic Elements 13. Color in Multimedia (Use of Color in Web Design and Interactive Media) 14. Practical Applications of Color Theory in Creating One's Own Color Palette (Designing with Colors: Application of Acquired Knowledge)		
1.5. Types of Teaching Methods	☒ Lectures ☐ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☐ Multimedia and network ☒ Laboratory ☐ Mentorship ☐ Other
1.6. Student obligations		
Mandatory attendance at lectures and laboratoty exercises. Prerequisite for exam participation: minimum 70% attendance at lectures and completed exercises. Students are required to submit the project assignment assigned during the semester.		

1.7. Student work monitoring							
Attendance	x	Activity in classes	x	Seminar paper	x	Experimental work	
Written exam	x	Oral exam	x	Essay		Research	
Project	x	Continuous knowledge assessment		Report		Practical work	x
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Assessment: <i>Project Assignment – 30%</i> <i>Written Exam – 50%</i> <i>Seminar Paper – 10%</i> <i>Completed Tasks in Exercises – 10%</i> Evaluation: <i>In the written exam, students identify and describe the basic concepts of color theory, color schemes, and explain the relationships between colors.</i> <i>During exercises, understanding the impact of different types of lighting, surrounding colors, and media on color perception will be assessed orally.</i> <i>During the work on seminar paper, students will explore the psychological impact of colors on emotions and behavior, as well as cultural variations in color perception.</i> <i>In an independent project or in pairs, students will apply historical and contemporary color theories in art and design to a design solution.</i> <i>In an independent project or in pairs, students will apply theoretical knowledge of color perception, light, and substrates to create harmonious color combinations and effective visual communication in typography and multimedia.</i>							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
Color : a workshop for artists and designers / David Hornung		2					
Understanding color : an introduction for designers / Linda Holtzschue		1					
Billmeyer and Saltzman's Principles of Color Technology /Roy S. Berns		3					
1.10. Supplementary literature							
Teaching material prepared by the course teacher and available online.							
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies							

Student survey, Self-Evaluation form, etc.

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Sanja Mahović Poljaček, PhD, Asst. Prof. Tamara Tomašegović, PhD, Assoc. Prof. Tomislav Cigula, PhD	
Course title	Integration of digital content for printing plate making	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	II.	
ECTS credit and teaching method	ECTS credits	
	Number of hours (L+E+S)	2+1+1

COURSE DESCRIPTION
1.1. Course objectives
<i>The aim of this course is to enable students to identify and connect phases of the graphic media production. After this course, students will be able to interpret adaptation of digital data in prepress and its influence on the motive reproduction. Furthermore, students will be able to differentiate types and characteristics of printing plates in the graphic reproduction chain. By analysis of specific design elements for various graphic products and needs of the communication mix, students will be able to identify needed technologies of printing plates for realization of their concept or adapt their concept to technical requests and limitations.</i>
1.2. Enrollment conditions
1.3. Expected learning outcomes
1. Break down graphic reproduction workflow 2. Identify characteristics of digital files in the graphic reproduction 3. Differentiate printing plate types and their reproduction capability 4. Analyse characteristics of printing plates and their applicability for a graphic product 5. Identify challenging elements of the motive in adjustment to reproduction system
1.4. Course content
1. Workflow of the graphic reproduction 2. Types of files in the reproduction chain 3. Characteristics of the files applicable in graphic reproduction 4. Printing plates in digital surroundings 5. Printing plate imaging

6. <i>Specifics of the printing plates for different printing techniques</i> 7. <i>Influence of the printing plate type on motive reproduction</i> 8. <i>Elements of the motive in the frame of various reproduction technique</i> 9. <i>Choosing the technology of the printing plates in graphic product reproduction</i> 10. <i>Defining the preflight parameters for the file check, motive preparation and analysis of the image on a printing plate</i>							
1.5. <i>Types of Teaching Methods</i>				☒ Lectures ☒ Seminars and workshops ☒ Exercises ☐ Online education ☐ Fieldwork		☒ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_	
1.6. <i>Student obligations</i>							
<i>Minimum of 50% attending classes, handed and presented seminar work, finished exercises</i>							
1.7. <i>Student work monitoring</i>							
Attendance	x	Activity in classes		Seminar paper	x	Experimental work	
Written exam	x	Oral exam	x	Essay		Research	
Project		Continuous knowledge assessment	x	Report	x	Practical work	x
Portfolio							
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
<i>Class attendance – 5%</i> <i>Written exam/Continuous knowledge assessment – 50%</i> <i>Oral exam – 10%</i> <i>Seminar paper about the printing plate choice according to the defined graphic product – 25%</i> <i>Report about motive adjustment according to printing plate analysis – 10%</i> <i>Evaluation:</i> 1. <i>In written form students will explain workflow and role of the phases</i> 2. <i>In written form students will identify file types in graphic reproduction</i> 3. <i>In written form students will sketch and comment printing plate types and their characteristics</i> 4. <i>In team seminar paper students will analyse printing plate's characteristics and their applicability for a graphic product</i> 5. <i>In report students will demonstrate motive adjustment according to the image on the printing plate to achieve wanted reproduction</i>							
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>							
Title		Number of copies		Number of students			
Wayne Collins; Alex Hass; Ken Jeffery; Alan Martin; Roberto Medeiros; and Steve Tomljanovic, <i>Graphic Design and</i>		Free online access					

<i>Print Production Fundamentals, BCCAMPUS, Victoria, Canada</i>		
Kipphan, H. (2001). Prepress. In: Kipphan, H. (eds) Handbook of Print Media. Springer, Berlin, Heidelberg. ISBN 978-3-540-67326-2	2	
<i>1.10. Supplementary literature</i>		
<i>1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
<i>Student survey, self-evaluation form, etc..</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	prof. Lidija Mandić PhD	
Course title	Color management	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	II.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+0+1

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The aim of the course is to acquire knowledge about the characteristics of the devices involved in the graphic reproduction process, which will enable them to be monitored and adapted to future technologies. Through this course, students will acquire basic knowledge about device characterization methods and distinguish between different algorithms for color transformation, and will be able to compare the advantages and disadvantages of using different approaches. By mastering the course, the student will be able to independently connect profiles within the workflow and thus enable the quality of reproduction within graphic production.</i>
1.2. <i>Enrollment conditions</i>
<i>Attended Graphic Prepress course</i>
1.3. <i>Expected learning outcomes</i>
1. <i>Understand the parameters when creating a device profile</i> 2. <i>Select the appropriate test cards when characterizing the device</i>

3. Connect the devices in the workflow								
4. Select profiles								
1.4. Course content								
1. Basics of the process of recording, processing and image formation 2. Measuring devices used to create profiles 3. Characteristics of the monitor 4. Characteristics of reflective media 5. Densitometric encoding 6. Color management system 7. Phenomena related to the experience of color 8. Calibration and characterization of input devices 9. Methods for device characterization 10. Calibration and characterization of the monitor 11. Calibration and characterization of output devices 12. Color range 13. Gamut mapping 14. Workflow of the color management system								
1.5. Types of Teaching Methods				☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork	☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_			
1.6. Student obligations								
1.7. Student work monitoring								
Attendance		Activity in classes		Seminar paper	x	Experimental work		
Written exam	x	Oral exam		Essay		Research		
Project		Continuous knowledge assessment	x	Report		Practical work		
Portfolio								
1.8. Assessment and evaluation of student work during classes and at the final exam.								
Assessment: Written exam-60% or as part of continuous assessment (colloquium) Colloquium 1 – 30% Colloquium 2 – 30 % Seminar 40% Evaluation								

1. <i>Evaluation In written form, through a colloquium, the student will explain basic knowledge in the field of color management systems</i> 2. <i>In written form, through a colloquium, students justify their knowledge of different approaches to creating an ICC profile</i> 3. <i>During the seminar, students create a workflow between input and output devices</i> 4. <i>In written form student will select profiles</i>		
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
Sharma, Understanding Color Management, Thomson, 2004	2	
P. Green (editor), <i>Color Management: Understanding and Using ICC Profiles</i> , John Wiley & Sons, Ltd, 2010.	1	
Supplementary literature P.Green, L. Macdonald, Color engineering: Achiving Device idependent color, Wiley, 2003 Tom Ashe: Color Management & Quality Output: Working with Color from Camera to Display to Print: (The Digital Imaging Masters Series), Routledge, 2014.		
1.10. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
<i>Student survey, self-evaluation form,</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Lidija Mandić, PhD	
Course title	Fundamentals of 3D modeling	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	<i>II.</i>	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>Upon completion of the course, the student can apply his knowledge of 3D modeling techniques in practical tasks. The student will be able to collect and interpret relevant data in order to classify different 3D modeling</i>

<i>methods. The student can use software tools for 3D modeling, choose appropriate techniques for certain tasks and check the accuracy and precision of the model. Also, he is able to carry out a complete modeling process and design a simple object, while understanding the basic principles of work and practices in the industry.</i>							
1.2. Enrollment conditions							
none							
1.3. Expected learning outcomes							
1. Explain the differences between different 3D modeling methods 2. Use tools to create simple objects 3. Use tools to create an image or video 4. Predict the steps for designing a simple object							
1.4. Course content							
1. Introduction to 3D modeling (basics of 3d modeling, applications in different industries, software overview) 2. Basic modeling methods (polygonal modeling methods, difference between polygonal, NURBS and CAD modeling, practical examples of simple models). 3. The working environment of the software for 3D modeling (overview of the interface and basic tools, navigation in the 3D space, settings and adjustments of the working environment). 4. Polygonal modeling - basic objects (creating basic geometric shapes, modifying and combining basic objects, using extruding, cutting and joining tools) 5. Polygonal modeling – (modifiers and deformations). 6. NURBS modeling (basics of NURBS curves and surfaces, applications and advantages of NURBS modeling). 7. Texturing and UV mapping (basics of texturing 3D models, UV mapping and unwrapping). 8. Materials and shading (creation and application of materials, basics of shading and light effects). 9. Light and lighting (types of light in a 3D environment, lighting settings and adjustments). 10. Basics of animation (introduction to animating 3D models, key frames and basic animations). 11. Rigging and skeletons (basics of rigging and creation of skeletons for animation, application of skeletons to 3D models). 12. Digital sculpting 13. Rendering and post-production (basics of rendering 3D scenes, rendering settings)							
1.5. Types of Teaching Methods				☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork		☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_	
1.6. Student obligations							
Project assignment/colloquium within lab exercises							
1.7. Student work monitoring							
Attendance	x	Activity in classes		Seminar paper		Experimental work	
Written exam	x	Oral exam		Essay		Research	

Project		Continuous knowledge assessment	x	Report		Practical work	x
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
<i>Evaluation</i> <i>Colloquium within exercises - 35%</i> <i>Written exam – 60% or as part of continuous assessment (colloquiums)</i> <i>Lecture colloquium – 30%</i> <i>Lecture colloquium – 30%</i> <i>Attendance at classes - 5%</i> <i>Evaluation:</i> <i>1. Explain in writing the differences between different 3D modeling methods</i> <i>2. In the exercises, use tools to create simple objects</i> <i>3. As part of the exercises, use the tools to create images or videos independently</i> <i>4. As part of the exercises and the practical task, students should predict the steps for the design of a simple object</i>							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
„Virtualna okruženja - Interaktivna 3D grafika i njene primjene“; Igor S. Pandžić, Tomislav Pejša, Krešimir Matković, Hrvoje Benko, Aleksandra Čereković, Maja Matijašević, Zagreb, Element, 2011		10		n			
1.10. Supplementary literature „Learning Blender: A Hands-On Guide to Creating 3D Animated Characters“; Oliver Villar; Addison-Wesley Professional, 2nd edition, 2017. „Digital Modeling“; William Vaughan; New Riders Pub; 1st edition; 2012							
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies							
Student survey, self-evaluation form, etc..							

COURSE DESCRIPTION

GENERAL INFORMATION	
Course leader	Prof. Lidija Mandić, PhD
Course title	Introduction to Virtual Reality

Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	<i>II.</i>	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	1+2+0

COURSE DESCRIPTION		
1.1. <i>Course objectives</i>		
<i>The expected competencies of the student upon completion of the course "Introduction to Virtual Reality" are the definition of terms related to virtual reality, the human system of vision, stereoscopy and perception. The student will be competent to recognize and classify devices and device parts for VR, compare different devices as well as describe the mode of operation of VR devices (hardware aspect). The student will distinguish certain programs (software aspect) for creating VR content, as well as sketch and plan a simple scene for virtual reality. The student will be competent to enumerate different applications of virtual reality technology.</i>		
1.2. <i>Enrollment conditions – 3D modeling basics</i>		
1.3. <i>Expected learning outcomes</i>		
1. <i>define the concepts of virtual reality</i> 2. <i>explain the working principles of VR devices</i> 3. <i>explain the human vision system (stereoscopy, perception, proprioception)</i> 4. <i>sketch the scene for VR</i>		
1.4. <i>Course content</i>		
1. Introduction to virtual reality, definitions and brief historical overview 2. Devices for VR (headsets, controllers, motion sensors) 3. Principles of operation of VR devices 4. Characteristics of the VR device (latency, number of frames per second, width of the field of view) 5. Vision system, stereoscopy, perception, proprioception 6. Immersion, interaction, imagination and presence 7. Interaction in VR (controllers, gestures, haptic feedback) 8. Ways of movement in the VR system and cybersickness 9. Measuring user experience (subjective and objective metrics) 10. Programs for 3D modeling and creating scenes for VR 11. 3D modeling, finished objects 12. Application of VR technology in different industries 13. Virtual and augmented reality 14. Impact of VR on social interactions and ethical issues 15. Seminars		
1.5. <i>Types of Teaching Methods</i>	☒ Lectures	☒ Independent tasks

				☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork	☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_			
1.6. Student obligations								
Project assignment/colloquium within lab exercises								
1.7. Student work monitoring								
Attendance		Activity in classes		Seminar paper	x	Experimental work		
Written exam	x	Oral exam		Essay		Research		
Project		Continuous knowledge assessment	x	Report		Practical work	x	
Portfolio								
1.8. Assessment and evaluation of student work during classes and at the final exam.								
<i>Evaluation:</i> Project assignment/colloquium within lab exercises - 20% Written exam – 60 % or as part of continuous assessment (colloquium) Colloquium 1 - 30 % Colloquium 2 - 30 % Seminar work - 20% <i>Evaluation:</i> 1. As part of the written exam, students will define the concepts of virtual reality 2. As part of the written exam, students will describe how the VR device works 3. As part of the written exam, students will explain the vision system (stereoscopy, perception, proprioception) 4. As part of the exercises, students will sketch a scene for VR								
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course								
Title		Number of copies		Number of students				
„Creating Augmented and Virtual Realities: Theory & Practice for Next-Generation Spatial Computing“; Erin Pangilinan, Steve Lukas, Vasanth Mohan; 2019; O'Reilly		2						
„Virtualna okruženja - Interaktivna 3D grafika i njene primjene“; Igor S. Pandžić, Tomislav Pejša, Krešimir Matković, Hrvoje Benko, Aleksandra		10						

Čereković, Maja Matijašević Zagreb, Element, 2011.		
Virtual reality; Greengard Samuel; Cambridge : The MIT Press; 2019.	3	
Virtual reality : concepts and technologies; Philippe Fuchs, Guillaume Moreau, Pascal Guitton; Crc press; 2011	1	
1.10. Supplementary literature Virtual reality; Steven M. LaValle, Cambridge University Press, 2023, (free e - book)		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form, etc..		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Asst. Prof. Marko Maričević, PhD	
Course title	Additive manufacturing techniques	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+1+0

COURSE DESCRIPTION
1.1. Course objectives
<i>To equip students with the understanding and application of fundamental principles and processes of additive manufacturing (3D printing). Upon completion of the course, students will be able to use various software tools for preparing and optimizing 3D models, as well as operate different types of 3D printers. Students will develop skills in solving technical issues during the 3D printing process, apply finishing techniques, and evaluate the quality of finished 3D printed models. The course also encourages the development of independence and responsibility through project planning and execution, as well as exploring innovations and future trends.</i>
1.2. Enrollment conditions
1.3. Expected learning outcomes

1. Explain the basic principles and technologies of additive manufacturing (3D printing) and their application in the graphic industry. 2. Apply software tools to prepare and optimize 3D models for additive manufacturing. 3. Create simple projects using material deposition technology and stereolithography. 4. Assess the quality of 3D printed models. 5. Identify technical problems arising during the manufacturing process. 6. Plan appropriate additive manufacturing and finishing processes for 3D models.		
1.4. Course content		
1. Introduction to 3D printing – basic concepts, history, and development of 3D printing, and its application in the graphic industry. 2. 3D printing technologies – overview of major 3D printing technologies, including FDM, SLA, and SLS, and their advantages and disadvantages. 3. Materials for 3D printing – familiarization with various materials used in 3D printing such as polymers, metals, and resins, and their applications. 4. 3D modeling and print preparation software – introduction to tools for 3D modeling and print preparation, including programs like Blender, Autodesk Fusion 360, and Autodesk Netfabb. 5. Preparing 3D models for printing – process of preparing 3D models for printing, including model optimization and generating digital files. 6. 3D printer parameters and management – basic parameters of 3D printers, including calibration and optimization of production parameters. 7. Finishing techniques – various finishing techniques used to improve the quality and finish of 3D printed models. 8. Technical problems and troubleshooting – identification and resolution of technical problems that arise during the 3D printing process. 9. Evaluation of 3D printed model quality – methods for evaluating the quality of 3D printed models, including measurement of surface finish accuracy and mechanical properties. 10. 3D printing process planning – planning and executing simple 3D printing projects, including teamwork and collaboration. 11. Innovations in 3D printing – analysis of the latest innovations in 3D printing technologies, including new materials and printing techniques. 12. Future trends in 3D printing – exploration and analysis of future trends in 3D printing, and critical thinking about technological development. 13. Application of 3D printing in industry – case studies and examples of the application of 3D printing in various industries.		
1.5. Types of Teaching Methods	x Lectures ☐ Seminars and workshops x Exercises x Online education ☐ Fieldwork	x Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other
1.6. Student obligations		
Compulsory attendance of lectures and exercises, preparation of a seminar paper. Condition for taking the exam: minimum attendance at 50% of classes and completed 50% of exercises. Written seminar paper and created project assignment.		

1.7. Student work monitoring							
Attendance	x	Activity in classes	x	Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	x
Project	x	Continuous knowledge assessment	x	Report		Practical work	x
Portfolio							

1.8. *Assessment and evaluation of student work during classes and at the final exam.*

Grading:

- *Seminars: 30%*
- *Exercises: 20%*
- *Project assignment: 20%*
- *Continuous knowledge assessment: 30%*

Evaluation:

1. *In written form, during continuous knowledge assessment, explain the basic principles and technologies of additive manufacturing (3D printing) and their application in the graphic industry.*
2. *During exercises, apply software tools for preparing and optimizing 3D models for additive manufacturing.*
3. *In the seminar paper, create a simple project using material deposition and stereolithography technologies.*
4. *In the exercise report, assess the quality of 3D printed models.*
5. *In written form, during continuous knowledge assessment, identify technical problems in the production process.*
6. *In the project assignment report, plan appropriate additive manufacturing and finishing processes for 3D models.*

1.9. *Mandatory literature and number of copies available in relation to the number of students currently attending the course*

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>3D printing / John Jordan.</i>	<i>1</i>	
<i>3D printing will rock the world / John Hornick.</i>	<i>1</i>	
VezaFabricated : The new world of 3D printing / Hod Lipson, Melba Kurman.	1	
The 3D printing handbook : technologies, design and applications / Ben Redwood, Filemon Schoeffer, Brian Garret.	1	

1.10. Supplementary literature

1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies

Student survey, self-evaluation form.

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. prof., Mile Matijević, PhD	
Course title	Visual Psychophysics	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+0+1

COURSE DESCRIPTION
1.1. Course objectives
<i>The objective of the course "Visual Psychophysics" is to equip students with the ability to understand and apply psychophysical principles in multimedia and visual communications. Students will acquire knowledge of the terminology, methods, and research related to psychophysics and will be able to apply this knowledge in the analysis and design of multimedia content. The course will enable students to understand the relationship between stimulus and perception and teach them how to apply these principles in creating effective visual solutions. Students will also study examples and cases for better insight into the theoretical and practical aspects of visual psychophysics.</i>
1.2. Enrollment conditions
1.3. Expected learning outcomes
1. Explain the basic principles and methods of visual psychophysics, including perception theories and research methods. 2. Differentiate psychophysical principles in the analysis and design of multimedia content. 3. Analyze the impact of various visual effects and adaptation processes on user perception. 4. Compare visual solutions based on psychophysical principles and effects. 5. Select design projects that utilize psychophysical principles to create effective visual communications.
1.4. Course content
1. Basic theoretical knowledge of visual psychophysics. Definition, history, and basic concepts of visual psychophysics.

2. *Psychophysical research and methods. Main research methods in psychophysics and methods for determining perception thresholds.*
3. *The relationship between stimulus and perception. Theories and models of perception and quantitative analysis of the relationship between stimulus and perception.*
4. *Visual field configuration. Anatomy and function of the eye, and visual assessment techniques.*
5. *Visual effects and adaptation. Background visual effects and adaptation effects in the perception of color and brightness.*
6. *Psychophysical effects in design. Application of psychophysical principles in graphic design and evaluation of visual solutions.*
7. *Optical illusions and perceptual tricks. Different types of optical illusions and their application in design.*
8. *Practical exercises and research work. Conducting psychophysical experiments, analyzing results, and applying them in design.*

1.5. <i>Types of Teaching Methods</i>	☒ Lectures ☒ Seminars ☐ Exercises ☐ Online ☐ Fieldwork	☒ Independent tasks ☒ Multimedia and ☐ Laboratory ☐ Mentorship ☐ Other_

1.6. Student obligations

Active participation in classes and online activities. Study scientific and professional literature, analyze and evaluate professional texts, and connect acquired knowledge. Register a seminar paper topic according to instructions on the course's online pages. Create and present a seminar paper. Participate in the evaluation of seminar papers according to instructions on the course's online pages and revise personal seminar papers based on received evaluations. Complete the final online self-evaluation form.

1.7. Student work monitoring

Attendance	x	Activity in classes	x	Seminar paper	x	Experimental work	
Written exam		Oral exam		Essay		Research	x
Project	x	Continuous knowledge assessment		Report		Practical work	
Portfolio		Final self-evaluation	x				

1.8. Assessment and evaluation of student work during classes and at the final exam.

Each activity is assigned a certain number of points. All points are recorded in an online evaluation and competency development system.

The following activities are evaluated:

1. Participation in lectures, seminar paper topic registration and justification (20%)
2. Seminar paper (50%)
3. Seminar paper presentation (10%)
4. Online activity and quality of seminar paper analysis and evaluation (20%)

Each student analyzes and evaluates the seminar paper topics and justifications and participates in

the evaluation of presentations according to clearly defined criteria. Students also evaluate peer work based on clearly defined criteria. The evaluation of all segments is conducted by comparing each student's analysis and evaluation with the teacher's. A higher agreement between student and teacher evaluations results in more points for the student.

Evaluation:

1. *Through lectures and seminars, as well as the seminar paper, explain the basic theoretical knowledge of visual psychophysics. Definition, history, and basic concepts of visual psychophysics.*
2. *In the seminar paper, differentiate psychophysical principles in the analysis and design of multimedia content.*
3. *In the seminar paper and its presentation, analyze the impact of various visual effects and adaptation processes on user perception.*
6. *In the seminar, compare visual solutions based on psychophysical principles and effects.*
4. *Through lectures, seminars, and the seminar paper, select design projects that utilize psychophysical principles to create effective visual communications.*

1.9. *Mandatory literature and number of copies available in relation to the number of students currently attending the course*

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Fairchild M. D., „Color Appearance Models“, Second Edition, 2006</i>	<i>1</i>	
<i>Hunt R. W. G., „The Reproduction of Colour“, 2004</i>	<i>1</i>	
<i>Wyszecki G., Stiles W. S., „Color Science: Concepts and Methods, Quantitative Data and Formulas“, Second Edition, Wiley-Classics, 2000</i>	<i>1</i>	

1.10. *Supplementary literature*

Kingdom F. A. A., Prins N., „Psychophysics: A Practical Introduction“ 2016

1.11. *Methods for monitoring the quality of acquired knowledge, skills, and competencies*

Student Survey, Initial and Final self-evaluation

COURSE DESCRIPTION

GENERAL INFORMATION	
Course leader	assoc. prof. Miroslav Mikota, PhD
Course title	Media and Applied Photography
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>
Course status	<i>Compulsory</i>

Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+1+1

COURSE DESCRIPTION		
1.1. Course objectives		
<i>The aim of the course is to enable students to acquire knowledge in the field of photographic images created through printed or electronic media. Students will become familiar with the technical, syntactic, and semantic approaches to the creation and realization of photographic images that illustrate textual content or convey information independently. The course will cover the approach to the areas of applied and media photography and the specificities in addressing basic photographic subjects used in the fields of media and applied photography. Throughout the course, students will gain knowledge about the technical approach to various phases of photographic systems depending on the area of applied and media photography and the media for the realization of photographic images.</i>		
1.2. Enrollment conditions		
Attended course Fundamentals of Photography		
1.3. Expected learning outcomes		
1. Explain the application of recording equipment in the context of media and applied photography. 2. Apply the rules of photographic technique, semantics, and syntax when shooting in the field of media photography. 3. Recognize different styles and areas in media photography through examples from the history of photography. 4. Utilize software tools for processing digital recordings of photographic images in the applied photography project. 5. Demonstrate the use of lighting when capturing technical, product, and studio photography. 6. Evaluate the ethical aspects of photography in the context of photojournalism and applied photography.		
1.4. Course content		
1. Introduction to Media and Applied Photography; overview of the development of media and applied photography. 2. Technical, syntactic, and semantic characteristics of photographic images created through other media. 3. Technical and syntactic approach to photographic representation of motion; sports photography. 4. Technical and syntactic approach to technical and product photography; close-up photography, macro photography; microphotography. 5. Technical and syntactic approach to food photography. 6. Technical and syntactic approach to fashion photography.		
1.5. Types of Teaching Methods	☒ Lectures ☒ Seminars and workshops ☒ Exercises	☒ Independent tasks ☐ Multimedia and network ☐ Laboratory

				☒ Online education ☐ Fieldwork	☐ Mentorship ☐ Other_		
1.6. Student obligations							
1.7. Student work monitoring							
Attendance	x	Activity in classes	x	Seminar paper	x	Experimental work	
Written exam	x	Oral exam	x	Essay		Research	
Project	x	Continuous knowledge assessment	x	Report		Practical work	x
Portfolio	x						
1.8. Assessment and evaluation of student work during classes and at the final exam.							
<i>Assessment: Project assignments within exercises and seminars 40%</i> <i>Written and oral exam – in the form of continuous assessment or final at the end of the semester – 60%</i> <i>Evaluation:</i> <i>1. Explain the basic equipment for shooting in the field of applied and media photography in written or oral form.</i> <i>2. In exercises, students present their knowledge of different approaches to photographic subjects through practical photography.</i> <i>3. In written or oral form, students explain the knowledge acquired from the history of media photography.</i> <i>4. In exercises and the project assignment, students process a series of photographs according to a given theme.</i> <i>5. In exercises, project assignments, or through a portfolio of works, students demonstrate their acquired knowledge in the area of lighting.</i> <i>6. In exercises or seminars, students evaluate their own work and the work of their peers.</i>							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
Miroslav Mikota, <i>Kreacija fotografijom</i> ,		4					
Kelby Scott, <i>The digital photography book</i>		1					
Focal encyclopedia of photography		2					
1.10. Supplementary literature							
<i>"Fotografija: Povijest i temelji" - John Szarkowski</i> <i>"Understanding Exposure: How to Shoot Great Photographs with Any Camera" - Bryan Peterson</i> <i>"The Photographer's Eye: Composition and Design for Better Digital Photos" - Michael Freeman</i>							

<i>"Light Science and Magic: An Introduction to Photographic Lighting" - Fil Hunter, Steven Biver, Paul Fuqua</i> <i>"Digital Photography Complete Course" - David Taylor</i> <i>"The Art of Photography: A Personal Approach to Artistic Expression" - Bruce Barnbaum</i> <i>"Portrait Photography: From Snapshots to Great Shots" - Erik Valind</i> <i>"The Landscape Photography Workshop" - Ross Hoddinott, Mark Bauer</i> <i>"The Digital Photographer's Guide to Light Modifiers" - Lindsay Adler</i> <i>"Photoshop for Photographers" - Martin Evening</i>
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies
<i>Student survey, self-evaluation form, etc..</i>

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	assoc. prof. Miroslav Mikota, PhD	
Course title	Fundamentals of Photography	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	II.	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+1+1

COURSE DESCRIPTION	
1.12.	<i>Course objectives</i>
<i>The aim of the course is to enable students to acquire fundamental knowledge in the field of photography media and photographic images, as well as their application in visual communications and multimedia systems. Students will become familiar with photographic systems and techniques for creating photographic images through the phases of individual photographic systems, techniques for forming the syntax of photographic images, the basics of semantics, and fundamental ways of achieving and presenting photographic images. The course will cover the basics of working with cameras and photographic equipment, the fundamentals of using light and lighting, as well as the processing and realization of photographic images that are created as a standalone medium or through other media using various photographic systems.</i>	
1.13.	<i>Enrollment conditions</i>
1.14.	<i>Expected learning outcomes</i>

1. Describe the historical development of photographic techniques and styles and their impact on contemporary practice. 2. Explain the basic concepts related to the syntax and semantics of photographic images, as well as their formation and use. 3. Describe different methods of technical, semantic, and syntactic formation of photographic images. 4. Evaluate the factors that can influence the quality of photographic images and their syntax. 5. Distinguish the fundamental principles of using various technical, syntactic, and semantic laws for different photographic subjects and methods of capturing, realizing, and presenting images. 6. Independently present photographic images through photography as a standalone medium or other media.							
1.15. Course content Introduction to photography, overview of the development of photographic systems, techniques, and styles. Basic equipment for shooting; classifications of cameras according to system, type of viewfinder, exposure element determination methods, focusing methods, format, resolution of digital cameras; classifications of lenses by focal length, aperture, purpose; selection of basic equipment for shooting. Additional equipment for shooting; filters; equipment for macro photography; equipment for photographic reproduction and digitization; light meters; color meters; flash units; other additional equipment. Shooting with a camera; preparing the camera for shooting, setting parameters for general and spectral sensitivity according to the photographic system; framing; determining exposure elements; focusing; shooting positions. Light and lighting; natural light; working with available light; artificial continuous lighting and flash lighting; basic lighting schemes. Basics of processing and realization in different photographic systems. Basic techniques for achieving photographic syntax. Fundamentals of achieving photographic semantics through photographic technique and syntax. Approach to capturing basic photographic subjects. Basics of realization and presentation of photographic images through photography as a standalone medium and other media.							
1.16. Types of Teaching Methods (				☒ Lectures ☒ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork		☒ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_	
1.17. Student obligations							
1.18. Student work monitoring							
Attendance	x	Activity in classes	x	Seminar paper	x	Experimental work	
Written exam	x	Oral exam	x	Essay		Research	

Project	x	Continuous knowledge assessment	x	Report		Practical work	x
Portfolio	x						
1.19. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
<i>Assessment: Project assignments within exercises and seminars 40%</i> <i>Written and oral exam – in the form of continuous assessment or final at the end of the semester – 60%</i> <i>Evaluation:</i> <i>1. Explain the historical development of photographic techniques and styles in written or oral form.</i> <i>2. In written or oral form, students describe basic concepts - syntax, technical, and semantic knowledge of the fundamentals of photography.</i> <i>3. In exercises, students demonstrate knowledge of different approaches to photographic subjects through practical photography.</i> <i>4. In the project assignment, students assess factors that may affect image quality.</i> <i>5. In the continuous knowledge assessment and seminars, students will distinguish the basic principles of using various technical, syntactic, and semantic laws for different photographic subjects and methods of capturing, realizing, and presenting images.</i> <i>6. In the project assignment, students create a portfolio of their work and independently present photographic images through photography as a standalone medium or other media.</i>							
1.20. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>							
<i>Title</i>		<i>Number of copies</i>		<i>Number of students</i>			
Miroslav Mikota, Kreacija fotografijom, 2000.		4					
Kelby Scott, The digital photography book, 2006		1					
Focal encyclopedia of photography, 4th Edition, Michael R. Peres Copyright 2007		2					
1.21. <i>Supplementary literature</i>							
"Fotografija: Povijest i temelji" - John Szarkowski "Understanding Exposure: How to Shoot Great Photographs with Any Camera" - Bryan Peterson "The Photographer's Eye: Composition and Design for Better Digital Photos" - Michael Freeman "Light Science and Magic: An Introduction to Photographic Lighting" - Fil Hunter, Steven Biver, Paul Fuqua "Digital Photography Complete Course" - David Taylor "The Art of Photography: A Personal Approach to Artistic Expression" - Bruce Barnbaum "Portrait Photography: From Snapshots to Great Shots" - Erik Valind "The Landscape Photography Workshop" - Ross Hoddinott, Mark Bauer "The Digital Photographer's Guide to Light Modifiers" - Lindsay Adler "Photoshop for Photographers" - Martin Evening							
1.22. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>							

Student survey, self-evaluation form, etc..

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. prof. Miroslav Mikota, PhD	
Course title	Photography in Multimedia	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+1+1

COURSE DESCRIPTION	
1.23.	<i>Course objectives</i>
<i>The aim of the course is to provide students with the knowledge and practical skills needed for creative shooting, processing, and optimization of photographs for digital platforms. Students will adopt techniques for creating photographic images at the intersection of still and moving images. Through the development of a portfolio and analysis of the application of photography in advertising, students will achieve independence in managing their own brand. Upon completion of the course, students will be able to independently create, edit, and optimize visual photographic content for online media while adhering to ethical standards and the quality of their work, as well as understanding the basic aspects of copyright in photography.</i>	
1.24.	<i>Enrollment conditions</i>
1.25.	<i>Expected learning outcomes</i>
1. Create photographic images at the intersection of still and moving images using series of photographs. 2. Edit photographic image records according to standard sizes and formats for online platforms. 3. Apply creative photography techniques to create engaging online content. 4. Analyze how photographic images are used in marketing, advertising, and branding. 5. Explain the ethical aspects and copyright issues in online photography. 6. Evaluate the effectiveness of photographs on social media.	
1.26.	<i>Course content</i>

1. *Techniques for depicting motion with still photographic images; stroboscopy, frozen motion, unfrozen motion, zooming, panning, photo sequence, chronophotography.*
2. *Techniques for creating animations through the representation of motion in photographic images at the intersection of still and moving images; GIF, stop-motion, cinemagraph, plotagraph, parallax effect, moving panorama, interactive image.*
3. *Editing photographs for the web and online platforms; sizes, file formats, compression - basics.*
4. *Creative photography techniques for online content.*
5. *Application of photography in web marketing and advertising.*
6. *Specificities of photographic images intended for social media.*
7. *Photography with mobile devices.*
8. *Optimization of photographs for search engines.*
9. *Photographic portfolio for websites and portals.*
10. *Ethics and copyright in online photography.*
11. *Branding for photographers – fundamentals.*

1.27. <i>Types of Teaching Methods</i>	☒ Lectures ☒ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork	☐ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_
---	---	---

Mandatory attendance at lectures and exercises. Students complete exercises independently each week, with a review of each student's final solutions recorded through the e-learning system. Requirement to access the exam: a minimum attendance of 30% of classes and 80% of completed exercises.

1.29. <i>Student work monitoring</i>							
Attendance	x	Activity in classes	x	Seminar paper		Experimental work	
Written exam	x	Oral exam	x	Essay		Research	
Project	x	Continuous knowledge assessment	x	Report		Practical work	x
Portfolio	x						

1. *Assessment: Project assignments within exercises and seminars 40%*
Written and oral exam – in the form of continuous assessment or final at the end of the semester – 60%
2. *Evaluation:*
3. *In the project assignment, students create photographic images at the intersection of still and moving images.*
4. *In exercises, students use software tools to adjust image file formats for different online environments.*

5. <i>In exercises, students independently apply their acquired knowledge in practice by creating engaging online content.</i> 6. <i>In the project assignment, students analyze photographs through their application in marketing, branding, and advertising by developing their portfolio.</i> 7. <i>In the written or oral exam, students explain the ethical aspects and copyright issues in online photography.</i> 8. <i>In the project assignment, students evaluate their own work and the work of their peers by assessing the effectiveness of photographs on social media.</i>		
1.31. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
Tom Ang, Cjeloviti priručnik za digitalnu fotografiju	5	
Miroslav Mikota, Kreacija fotografijom	4	
Tom Ang, Digital photography masterclass	1	
1.32. <i>Supplementary literature</i> "Creating Motion Graphics with After Effects", Chris Meyer and Trish Meyer, "The Animator's Survival Kit", Richard Williams "Stop Motion: Craft Skills for Model Animation", Susannah Shaw "Animation: From Concept to Production", Hannes Rall "Photoshop for Video: Animating a Still", Richard Harrington		
1.33. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
<i>Student survey, self-evaluation form, etc..</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Diana Milčić, PhD, Assoc. prof. Tomislav Cigula, PhD	
Course title	Project planning in graphic technology	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	1+0+2

COURSE DESCRIPTION

1.1. Course objectives							
<i>The aim of this course is to enable students to identify needs and plan projects for production of various graphic media. By mastering this course, students will be able to assess the necessary resources (material, technological and human), as well as plan the time sequence and control points in the project of graphic media production. Students will improve their ability to work in a team and work ethic by performing individual and team tasks. Additionally, they will improve presentation skills by presenting a project planning for production of defined graphic media.</i>							
1.2. Enrollment conditions							
No							
1.3. Expected learning outcomes							
1. Explain project elements and project planning processes. 2. Identify the elements of graphic media production. 3. Plan the project of graphic media production. 4. Demonstrate teamwork. 5. Present project planning results to team members and non- team members.							
1.4. Course content							
1. The project and its elements. 2. Project life cycle. 3. Project planning. 4. Elements of a defined graphic medium. 5. Project management methodologies. 6. Project management techniques. 7. Project management tools. 8. Structure of the seminar work and search of sources.							
1.5. Types of Teaching Methods				☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork		☒ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_	
1.6. Student obligations							
Min 50% class attendance, reports of independent assignments submitted, team seminar presented							
1.7. Student work monitoring							
Attendance	x	Activity in classes		Seminar paper		Experimental work	
Written exam	x	Oral exam	x	Essay		Research	
Project	x	Continuous knowledge assessment	x	Report	x	Practical work	

Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Assessment: Attendance at classes - 10% Written exam/continuous knowledge check – 30% Oral exam - 10% Report of an individual task (project implementation planning) – 30% Presentation of the team seminar (planning, implementation and analysis of the production of given graphic media) - 20% Evaluation: 1. In writing form, students will explain the project elements and project planning. 2. In the form of an individual task and the preparation of a team seminar, students will identify the elements of graphic media production 3. In the form of an individual task and the preparation of a team seminar, students will plan a project for graphic media production. 4. As part of the team seminar work, students will prove their ability to work in a team 5. As part of the team seminar work, students will prove their ability to present professional data.							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
Association for Project Management, Introduction to Project Planning, 2008		Available in open access					
Project planning manual, Wildlife Management Series, 2001		Available in open access					
1.10. Supplementary literature							
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies							
Student survey, self-evaluation form							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Diana Milčić, PhD, Assoc. prof. Tomislav Cigula, PhD	
Course title	Quality analysis of multimedia content	
Study programme	Undergraduate university study programme Multimedia and Visual Communications	
Course status	Compulsory	
Year	III.	
	ECTS credits	3

ECTS credit and teaching method	Number of hours (L+E+S)	2+1+0
---------------------------------	-------------------------	-------

COURSE DESCRIPTION		
1.1. Course objectives		
<i>The aim of this course is to enable students to apply basic and professional knowledge in the field of quality control in media production. Students will be able to evaluate the characteristics of multimedia content using objective control methods. Students will be able to choose and apply methods for checking the technical characteristics of multimedia content, as well as apply methods for testing user experience and satisfaction by determining statistical valorization of the obtained data. Furthermore, students will be able to define and apply international standards in the field of multimedia production. In addition, students will be trained to analyze the triangle "price-production time-quality level" and analyze its elements on a multimedia product.</i>		
1.2. Enrollment conditions		
No		
1.3. Expected learning outcomes		
1. Interpret basic concepts from the field of media content quality 2. Choose evaluation methods according to the characteristics of multimedia content 3. Assess user satisfaction with multimedia content 4. Identify international and national standards in the performance of some multimedia content. 5. Contrast the elements of a multimedia product in the triangle of price-production time-level of quality.		
1.4. Course content		
1. Basic concepts of quality control in multimedia content; 2. Measurable characteristics of multimedia content; 3. Measurement methods in the control of multimedia content; 4. Objective and subjective methods of multimedia content analysis; 5. Statistical analysis in checking multimedia content; 6. Credibility of the results of statistical content control; 7. Standardization of performance of multimedia content; 8. International and national standards in performance and distribution of multimedia content; 9. The triangle "price-production time-level of quality" and the connection with the elements of a multimedia project.		
1.5. Types of Teaching Methods	☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_
1.6. Student obligations		
Minimum 50% attendance at lectures and exercises.		

1.7. Student work monitoring							
Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam	X	Oral exam	X	Essay		Research	
Project		Continuous knowledge assessment	X	Report	X	Practical work	
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Assessment: Class attendance: 5% Written exam: 50% or as part of continuous assessment: 1st colloquium 25% + 2nd colloquium 25% Oral exam: 20% Submitted reports of work on exercises: 25% Evaluation: 1. In written form, students will interpret basic terms in quality control of multimedia content. 2. In written form, students will categorize the characteristics of multimedia content and present the results of the analysis carried out in the exercises in the form of a report. 3. In the form of a report, students will present the results of the statistical analysis of user experience research. 4. In the written exam, standards in the performance of multimedia content will be identified. 5. In the form of a report, a case study of the analysis of multimedia content regarding the triangle "price-performance time-level of quality" will be submitted.							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
C. Wen Chen , P. Chatzimisios, T. Dagiuklas , L. Atzori , Multimedia Quality of Experience (QoE): Current Status and Future Requirements, Wiley, 2016.							
A: Mellouk, H. A: Tran, Quality of Experience for Multimedia, Wiley, 2013.							
1.10. Supplementary literature							
Z. Li, M.S. Drew, Fundamentals of Multimedia, 2004, dostupno online							
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies							
Student survey, self-evaluation form							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. prof. Petar Mišević, PhD	
Course title	Intellectual property	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+0+1

COURSE DESCRIPTION	
1.34.	<i>Course objectives</i>
<i>The aim of this course is to equip students with the knowledge and skills necessary to understand and apply intellectual property concepts in the context of the graphic industry. Students will gain knowledge about the basics of copyright and related rights, and their role in the protection and commercialization of products. Through practical examples and interdisciplinary approaches, students will learn to identify market opportunities, explain the potential of innovations, develop ethical and professional strategies for managing intellectual property, and acquire skills in licensing and technology transfer in both academic and industrial contexts.</i>	
1.35.	<i>Enrollment conditions</i>
1.36.	<i>Expected learning outcomes</i>
<i>1. Explain the fundamental aspects of intellectual property, including patents, trademarks, copyrights, trade marks, industrial design, and trade secrets.</i> <i>2. Analyze intellectual property issues specific to the graphic industry and propose strategies for managing them.</i> <i>3. Apply strategies for the protection and commercialization of intellectual property in the graphic industry.</i> <i>4. Recognize ethical dilemmas related to intellectual property and critically reflect on them.</i> <i>5. Demonstrate the basic aspects of negotiation and licensing related to intellectual property in a graphic context.</i>	
1.37.	<i>Course content</i>
<i>1. Introduction to Intellectual Property: History, significance, and basic concepts of intellectual property.</i> <i>2. Intellectual Property Basics: Different types of intellectual property – patents, trademarks, copyrights, trade marks, industrial design, and trade secrets.</i> <i>3. Patents in Graphic Engineering: The importance of patents, the application process, and their role in protecting innovations.</i> <i>4. Copyright in the Digital Age: How copyright affects software tools, simulations, and digital technologies in the industry.</i>	

5. *Trademarks and Branding: The importance of branding in graphic products and technologies, and how to protect brands through trademarks.*
6. *Industrial Design in the Graphic Industry: Significance and protection of the aesthetic aspects of products.*
7. *Trade Secrets and Business Confidentiality: Protection of business information, technologies, and knowledge in the industrial sector.*
8. *Intellectual Property Management: Strategies, practices, and tools for efficient management of intellectual property in companies.*
9. *Innovations in Graphic Engineering: The innovation process, its importance, and how to foster innovation in the graphic industry.*
10. *Technology Commercialization: Turning innovations into commercial products or processes.*
11. *Intellectual Property and Collaboration: The importance of collaboration between the academic and industrial sectors, and how intellectual property can impact partnerships.*
12. *Ethics, Intellectual Property, and Innovation: Moral and ethical aspects in the context of intellectual property and innovations in the industry.*
13. *Global Aspects of Intellectual Property: Differences in intellectual property approaches and regulations worldwide, and their impact on the graphic industry.*
14. *Legal Disputes and Intellectual Property Misuse: Analysis of real cases, legal consequences, and how to avoid them.*
15. *Practical Workshops and Case Studies: Analysis of real cases, workshops, and projects related to intellectual property and innovations in graphic engineering.*

1.38.	Types of Teaching Methods			☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other		
1.39.	Student obligations						
Class attendance: 70% or more Completed seminar paper							
1.40.	Student work monitoring						
Attendance	X	Activity in classes	X	Seminar paper	X	Experimental work	
Written exam	X	Oral exam	X	Essay		Research	X
Project		Continuous knowledge assessment	X	Report		Practical work	
Portfolio							
1.41.	Assessment and evaluation of student work during classes and at the final exam.						
Grading: Class attendance: 10%							

<i>Written exam: 50%</i> <i>Seminar paper: 40%</i> <i>Evaluation:</i> <i>1. In written form, explain the fundamental aspects of intellectual property, including patents, trademarks, copyrights, trade marks, industrial design, and trade secrets.</i> <i>2. In the seminar paper, analyze intellectual property issues specific to the graphic industry and propose strategies for managing them.</i> <i>3. In the seminar paper, apply strategies for the protection and commercialization of intellectual property in the graphic industry.</i> <i>4. In the seminar paper, recognize ethical dilemmas related to intellectual property and be able to critically reflect on them.</i>		
1.42. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Sveučilišni udžbenik: Upravljanje intelektualnim vlasništvom u organizaciji, autori: Matanovac-Vučković, R., Mišević, P., Kanceljak, . I., Izdavač: HGK i Sveučilište Sjever, Zagreb, 2023.</i>	15	
<i>Zakon o autorskom pravu i srodnim pravima: NN broj 111/2021</i>	5	
<i>DIREKTIVA (EU) 2019/790 EUROPSKOG PARLAMENTA I VIJEĆA od 17. travnja 2019. o autorskom i srodnim pravima na jedinstvenom digitalnom tržištu i izmjeni direktiva 96/9/EZ i 2001/29/EZ</i>	5	
1.43. Supplementary literature		
1.44. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
<i>Student survey, self-evaluation form, etc..</i>		

COURSE DESCRIPTION

GENERAL INFORMATION	
Course leader	Prof. Nikola Mrvac, PhD
Course title	Interactive Technologies
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>
Course status	<i>Compulsory</i>
Year	II.

ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION		
1.45.	Course objectives	
Students will learn about the fundamental concepts and theories behind interactive technologies, including the history and development of this field. The aim of the course is to equip students with practical skills for applying modern interactive technologies, including the development of web and mobile applications, virtual reality, and augmented reality. Students will learn to analyze how interactive technologies impact user experience and how they can be utilized to solve specific industry problems.		
1.46.	Enrollment conditions	
1.47.	Expected learning outcomes	
1. Explain the technological foundations and trends in the field of interactive technologies. 2. Apply tools and platforms for creating interactive applications. 3. Identify interactive projects that demonstrate technical and creative problem-solving. 4. Evaluate the effectiveness and usefulness of interactive technologies in various contexts.		
1.48.	Course content	
14. Introduction to interactive technologies 15. History of interactive technologies 16. Foundations of programming for interactivity 17. Tools and platforms for interactive design 18. User experience (UX) and user interface (UI) design 19. Web application development 20. Mobile application development 21. Virtual and augmented reality (VR/AR) technologies 22. Interactive installations and art projects 23. Analytics and metrics in interactive projects 24. Security and privacy in interactive systems 25. Case studies and practical examples 26. Working on a project assignment: from idea to prototype 27. Evaluation of interactive projects 28. The future of interactive technologies		
1.49.	Types of Teaching Methods	x Lectures x Seminars and workshops ☐ Exercises X Online education ☐ Fieldwork X Independent tasks x Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_

1.50. <i>Student obligations</i>							
<i>Compulsory attendance of lectures and exercises, preparation of a seminar paper. Condition for taking the exam: minimum attendance at 50% of classes and completed 50% of exercises. Written seminar paper and created project assignment</i>							
1.51. <i>Student work monitoring</i>							
Attendance	x	Activity in classes	x	Seminar paper	x	Experimental work	
Written exam		Oral exam		Essay		Research	x
Project	x	Continuous knowledge assessment	x	Report		Practical work	x
Portfolio							
1.52. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
<i>Grading:</i> • <i>Seminars: 30%</i> • <i>Exercises: 20%</i> • <i>Project assignment: 20%</i> • <i>Continuous knowledge assessment: 30%</i>							
<i>Evaluation:</i> 7. <i>In written form, during continuous knowledge assessment, explain the technological foundations and trends in the field of interactive technologies.</i> 8. <i>During laboratory exercises, apply tools and platforms for creating interactive applications.</i> 9. <i>In the project assignment, identify interactive projects that demonstrate technical and creative problem-solving.</i> 10. <i>In the seminar paper, evaluate the effectiveness and usefulness of interactive technologies in various contexts.</i>							
1.53. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>							
<i>Title</i>		<i>Number of copies</i>		<i>Number of students</i>			
Programming the Internet of Things: An Introduction to Building Integrated, Device-to-Cloud IoT Solutions, Andy King, O'Reilly Media, 2021.		0					
Cases on Immersive Virtual Reality Techniques, Kenneth C.C. Yang, IGI Global, 2019.		0					
1.54. <i>Supplementary literature</i>							
1.55. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>							
<i>Student survey, self-evaluation form.</i>							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Nikola Mrvac, PhD, asst.prof. Martina Hajdek, PhD	
Course title	Presentation of information	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	I	
ECTS credit and teaching method	ECTS credits	4 ECTS
	Number of hours (L+E+S)	2+0+2

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The goal of this course is to train students to create visually effective and technically correct presentations adapted to the specific needs of the audience. Students will learn to apply the basic principles of visual transmission of information, use modern tools and techniques for creating presentations, and adjust the content depending on the context and audience profile. The course also encourages critical analysis of the effectiveness of presentations and the application of ethical principles in the collection, processing and presentation of information, which ensures transparency, accuracy and professionalism in communication.</i>
1.2. <i>Enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
1. Apply the basic principles of visual transmission of information in the creation of presentations. 2. Use tools and techniques necessary for effective presentation of information. 3. Make different types of presentations adapted to the specific needs of the audience and context. 4. Analyze the effectiveness of presentations. 5. Apply ethical principles in the collection, processing and presentation of information.
1.4. <i>Course content</i>
1. Introduction to information presentation 2. Theoretical foundations of visual communication 3. Presentation design: Planning and structuring 4. Tools and software for presentation 5. Data visualization for clear information transfer 6. Typography and readability in presentations 7. Use of colors and visual identity 8. Photos and visuals in presentations

9. Interactivity and audience engagement							
10. Presentations for web and digital platforms							
11. Evaluation and feedback on presentations							
12. Ethics in the presentation of information							
1.5. Types of Teaching Methods				☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork		☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☒ Mentorship ☐ Other	
1.6. Student obligations							
Attendance at classes - 80%.							
Design and report the topic of the seminar paper in accordance with the instructions on the online pages of the course.							
Create and present a seminar paper.							
1.7. Student work monitoring							
Attendance	x	Activity in classes	x	Seminar paper	x	Experimental work	
Written exam		Oral exam		Essay		Research	x
Project		Continuous knowledge assessment	x	Report		Practical work	x
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Evaluation:							
Seminar paper – 40%							
Presentation of the seminar work - 40%							
Continuous knowledge check – 20%							
Valuation:							
As part of the seminar work, apply the basic principles of visual information transfer in the creation of presentations.							
As part of the presentation of the seminar work, use the tools and techniques necessary for the effective presentation of information							
As part of the seminar work, make different types of presentations adapted to the specific needs of the audience and context.							
Analyze the effectiveness of presentations in writing.							
As part of the seminar work, apply ethical principles in the collection, processing and presentation of information.							

1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
Title	Number of copies	Number of students
<i>The visual display of quantitative information / Edward R. Tufte, Cheshire, Conn. : Graphics Press, 2001.</i>		
<i>Najbolji prezenter : tehnika, stil i strategija najpoznatijega američkog trenera govorništa / Jerry Weissman ; [prevoditelji Jagoda Poropat Darrer, Davor Meštrović].</i>		
Infogram Resources	https://infogram.com/	
1.10. Supplementary literature <i>Information visualization : perception for design / Colin Ware, 2013.</i> <i>Prezentacijom do uspjeha, Weissman Jerry, 2006.</i>		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Nikola Mrvac, PhD	
Course title	Structuring of Print Media	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	I.	
ECTS credit and teaching method	ECTS credits	4 ECTS
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. Course objectives
<i>The aim of this course is to enable students to understand and apply printing technologies and production processes in the graphic industry. Students will learn to distinguish the suitability of different printing technologies for specific graphic products, explain the entire production process and apply theoretical knowledge in the creation of practical printing projects. The course will also cover the standardization of material consumption and the demonstration of the flow of the production process depending on the type of product.</i>

1.2. Enrollment conditions		
1.3. Expected learning outcomes		
1. Differentiate the suitability of certain technologies for printing certain graphic products. 2. Explain the production process of creating a graphic product 3. Demonstrate the flow of the printing production process depending on the type of graphic product. 4. Show the arrangement of pages for individual printed sheets and determine the lines of cut, binding and folding of the printed sheet. 5. Standardize the consumption of materials and labor in the printing production process for a specific graphic product. 6. Plan the elaboration of the technical technological process for printing		
1.4. Course content		
1. Introduction to printing processes, general printing technology 2. Elaboration of the printing production process 3. The flow of the printing production process depending on: the type of graphic product, the shape of the graphic product, the complexity of the graphic product and the available means of work 4. Description (snapshot) of the graphic product 5. Criteria for selecting a printing technique 6. Criterion for selecting the order of paper for the production of individual graphic products or parts of these products 7. Analysis of the consumption of basic materials in accordance with the conditions of printing production 8. Standards of printing machines; criteria for choosing printing machines for printing individual parts of a graphic product 9. Placing the graphic product on the sheet and designing the assembly sheet 10. Determination of cut lines, connections and bending 11. Labor standards 12. Standards of material consumption 13. Calculation of required quantities of materials 14. Sustainability in printing 15. Trends in science and technology affecting printing production		
1.5. Types of Teaching Methods	☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☒ Mentorship ☐ Other_
1.6. Student obligations		
Attendance at classes - 80% Create and present project tasks.		
1.7. Student work monitoring		

Attendance	x	Activity in classes	x	Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	x
Project	x	Continuous knowledge assessment	x	Report		Practical work	x
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Evaluation:

1. Project assignment – 45%

2. Project assignment – 45%

Continuous knowledge check - 10%

Valuation:

As part of the project tasks, distinguish the suitability of certain technologies for printing certain graphic products.

In oral form, explain the production process of creating a graphic product

As part of the project tasks, demonstrate the flow of the printing production process depending on the type of graphic product.

As part of the project tasks, show the arrangement of pages for individual printed sheets and determine the lines of cut, binding and folding of the printed sheet.

As part of the project tasks, to standardize the consumption of materials and labor in the printing production process for a specific graphic product.

As part of the project tasks, plan the elaboration of the technical technological process for printing.

1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Suvremeni ofsetni tisak / Stanislav Bolanča, 1991.</i>		

1.10. Supplementary literature

1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies

Student survey

COURSE DESCRIPTION

GENERAL INFORMATION	
Course leader	Assoc. Prof. Daria Mustić, PhD
Course title	Communication Science

Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	Compulsory	
Year	II.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+1+0

COURSE DESCRIPTION
<i>1.1. Course objectives</i>
By the end of the course, students will be able to distinguish fundamental theories and models of interpersonal communication and recognize them in social interactions. They will be able to apply effective communication techniques in various social and professional contexts, analyze communication relationships, and overcome communication barriers. The ultimate goal is to assess their own communication skills, develop strategies for improvement, and create plans for conflict resolution and teamwork enhancement.
<i>1.2. Enrollment conditions</i>
None
<i>1.3. Expected learning outcomes</i>
Distinguish fundamental theories and models of interpersonal communication. Explain key concepts such as verbal and non-verbal communication, listening, and feedback. Apply effective communication techniques in various social and professional contexts. Analyze interactions in real-life situations and identify communication barriers. Evaluate personal communication skills and develop strategies for their improvement. Compare plans for conflict resolution and improving teamwork through effective communication.
<i>1.4. Course content</i>
1.Introduction to interpersonal communication: Definitions, importance, and key components. 2. Theories of interpersonal communication: Overview and application of major theories. 3. Verbal communication: Language expressions, tone, and communication style. 4. Non-verbal communication: Types, interpretation, and application of non-verbal cues. 5. Feedback: Giving and receiving feedback. 6. Active listening: Techniques and their importance. 7. Perception in communication: The impact of perception on communication processes and personal image. 8. Communication barriers: Identifying and overcoming obstacles in communication. 9. Emotional intelligence in communication: Understanding and managing emotions. 10. Assertive communication: Definition, importance, and techniques of assertive communication. 11. Team communication: Team dynamics and the role of communication. 12. Conflict and conflict resolution: Strategies for managing and resolving conflicts. 13. Communication in the digital age: The impact of technology and artificial intelligence on interpersonal communication. 14. Ethics in communication: Ethical issues and responsibilities in communication.

15. Self-assessment and development of communication skills: Tools and techniques for self-assessment and improvement.							
1.5. <i>Types of Teaching Methods</i>				☒ Lectures ☐ Seminars and workshops ☒ Exercises ☐ Online education ☐ Fieldwork		☐ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other	
1.6. <i>Student obligations</i>							
Students must regularly attend classes and complete exercises. Minimum attendance is 50% for lectures and 80% for exercises.							
1.7. <i>Student work monitoring</i>							
Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam	X	Oral exam	X	Essay	X	Research	
Project		Continuous knowledge assessment	X	Report		Practical work	X
Portfolio	X						
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
Grading: Written exam – 60% or continuous assessment through colloquiums Colloquium 1 – 30% Colloquium 2 – 30% Exercise tasks – 20% Case study analysis and essay – 20%							
Evaluation: A written exam with essay-type theoretical questions. A written exam with essay-type theoretical questions and group presentations. Practical exercises and simulations, active discussion in exercises regarding communication performance. Case study analysis and reflective essays. Portfolio with personal reflections and development plans. Comparison and presentation of a plan for conflict resolution and improving team dynamics.							
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>							
Title		Number of copies		Number of students			
Leinert Novosel, S. (2015). Komunikacijski kompas (2nd expanded edition). Plejada, Zagreb.							

Makovčić, J. (2021). Komunikacijski umjetnik: izvedbene tehnike u javnom nastupu. V.B.Z., Zagreb.		
1.10. Supplementary literature Sullivan, J. (2017). Simply said: communicating better at work and beyond. Wiley, Hoboken. Bovee, C.L., & Thill, J.V. (2012). Suvremena poslovna komunikacija. Mate, Zagreb. Reardon, K.K. (1998). Interpersonalna komunikacija: gdje se misli susreću. Alinea, Zagreb.		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Daria Mustić, PhD	
Course title	Visual and Media Communication	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	Elective	
Year	II.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+0+1

COURSE DESCRIPTION
1.1. Course objectives
After completing the course, students will be able to identify, explain, and critically apply theoretical frameworks of visual communication and media studies. Using methodological tools such as semiotic, discourse, and narrative analysis, students will be able to analyze and interpret visual phenomena from various media platforms. They will be able to evaluate how cultural contexts shape and change the meanings of visual content and will be able to apply ethical standards and social responsibility in the creation and distribution of visual media content. Students will critically reflect on the impact of visual media on society and develop the skills necessary for competent participation in the digital and media environment. These competencies will enable students to act as informed and responsible professionals in fields related to media, communication, and design.
1.2. Enrollment conditions
None
1.3. Expected learning outcomes

Explain key theories and concepts of visual studies and their historical development. Interpret how different media create, transmit, and modify meanings through visual content. Apply semiotic analysis to explore visual phenomena in various media. Use discourse analysis to deconstruct visual messages and their contexts. Critically analyze visual content from different media platforms using theories of visual perception and media culture. Interpret the influence of cultural and social factors on the interpretation of visual content.							
1.4. Course content							
1. Basics of visual communication: Definitions, importance, and fundamental concepts. 2. Visual perception and cognition: Processes of visual perception and their application in communication. 3. History and theories of visual studies: Overview and application of major theories. 4. Semiotic analysis of visual media: Basics, methods, and application of semiotic analysis. 5. Discourse analysis of textual and visual content: Types of discourse analysis, interpretation, and application. 6. Narrative analysis in visual media: Structure, techniques, and significance of narratives in visual media. 7. The influence of culture on visual communication: Cultural factors and their role in shaping visual messages. 8. Visual rhetoric and persuasion: Techniques of visual rhetoric and their application in persuasion. 9. Culture and media products: The impact of media images on reflecting and shaping cultural values. 10. Media representation and identity: Media representation of different identities and social groups. 11. Interactive media and social engagement: Analyzing the role of interactive media in promoting participatory culture. 12. Digital transformation and visual communication: The impact of digital transformation on practices and theories of visual communication. 13. Visual literacy in the digital age: The influence of artificial intelligence on the credibility and evaluation of media and visual messages. 14. Visual manipulation and ethics: Analysis of techniques of visual manipulation and ethical issues in media.							
1.5. Types of Teaching Methods				☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork		☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_	
1.6. Student obligations							
Students must regularly attend classes and complete independent assignments. A minimum attendance of 50% in lectures and 80% in seminar activities is required.							
1.7. Student work monitoring							
Attendance	X	Activity in classes	X	Seminar paper	X	Experimental work	
Written exam	X	Oral exam		Essay		Research	X

Project		Continuous knowledge assessment	X	Report		Practical work	
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Grading: Written exam – 60% or through continuous assessment (colloquiums) Colloquium 1 – 30% Colloquium 2 – 30% Seminar paper – 30% Activity in seminars – 10% Evaluation: A written exam with essay-type theoretical questions. Presentation of case studies from various media with a focus on interpreting the creation and transformation of meanings. Semiotic analysis of selected visual materials in the form of a written report. Case analysis where students use discourse analysis to deconstruct visual messages and their contexts. Active participation in oral discussions during seminars where visual content is critically analyzed. A seminar paper in which students will analyze the influence of cultural and social factors on the interpretation of selected visual content.							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
Lester, P.M. (2021). Visual Communication: Images with Messages. Dallas: Lex Publishing.							
Teruggi, P.J. & Duffy, M. (2022). Visual Communication: Insights and Strategies. Hoboken: John Wiley & Sons.							
1.10. Supplementary literature							
Bruhn, J.K. (2021). A Handbook of Media and Communication Research: Qualitative and Quantitative Methodologies. New York: Routledge. Kunczik, M. & Zipfel, A. (2006). Uvod u znanost o medijima i komunikologiju [Introduction to Media Science and Communication]. Zagreb: Friedrich Ebert Foundation. Available at: https://library.fes.de/pdf-files/bueros/kroatien/04582.pdf							
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies							
Student survey, self-evaluation form, etc..							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Asst. Prof. Zoran Najdanović, PhD	
Course title	Basics of Marketing	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+0+1

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The goals of the course are to guide students towards a comprehensive understanding of marketing principles and practices. Students will learn to develop and implement marketing strategies tailored to the digital age, with a focus on identifying the needs of target groups. The program covers digital marketing specific to multimedia, branding, and monitoring and applying the latest trends. Additionally, there is an emphasis on developing communication skills so that students can effectively convey marketing ideas and strategies to a wide range of target audiences.</i>
1.2. <i>Enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
1. Explain the fundamental principles and theories of marketing, strategies, and tactics. 2. Use digital platforms and tools to promote products and services in a digital environment. 3. Demonstrate how to segment the market for products and services and how to target specific segments using appropriate marketing strategies. 4. Interpret how consumers perceive, decide, and react to marketing activities in the context of a multimedia presentation. 5. Use analytical tools to measure the effectiveness of marketing campaigns. 6. Recognize the importance of adapting marketing strategies to changing market trends in a globalized world.
1.4. <i>Course content</i>
1. Introduction to Marketing: Overview of basic marketing concepts, their importance in multimedia and visual communications, and how digital society influences this interaction. 2. Market Analysis and Segmentation: Understanding market trends, identifying the target audience, and segmenting market objectives in the context of digitalization. 3. Branding and Positioning: The importance of branding, how to create a strong brand identity, and strategies for positioning products or services in a competitive market in a digital environment. 4. Digital Marketing: Overview of digital marketing tools and strategies and their application in promoting products and services.

5. **Product and Service Development:** How to develop innovative products and services while considering market needs and trends in digitalization.
6. **Pricing Strategies:** Setting prices for products and services, the impact of digitalization on pricing strategies, and pricing models.
7. **Digital Distribution Channels:** How digitalization changes distribution channels and how to optimize online sales pathways.
8. **Communication and Public Relations:** The importance of communication in a globalized competitive environment, digital communication strategies with users, consumers, and stakeholders.
9. **Sustainability and Green Marketing Strategies:** The impact of sustainable practices on marketing products and services and how to communicate green initiatives.
10. **Ethics in Marketing and Social Responsibility:** The moral aspects of marketing, practices, and ways of responsible corporate conduct.
11. **The Customer at the Center of the Digital Society:** Understanding consumer behavior in a digital environment and how to acquire and retain customers in specific sectors.
12. **Trends and the Future of Marketing in Business:** Predictions about future trends in marketing, strategies, and opportunities for preparing for future challenges.
13. **Analysis of Real Marketing Campaigns in a Specific Sector:** Workshops for developing marketing strategies and projects.

1.5. <i>Types of Teaching Methods</i>	☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_
--	---	--

1.6. Student obligations

Actively participate in classes and online activities.

Prepare a seminar paper in accordance with the guidelines and assigned literature.

Complete periodic online reporting forms on completed tasks and obligations.

Participate in the reviews of seminar papers, according to the instructions on the course's online platform.

Supplement and revise the seminar paper based on the reviews.

Participate in a joint project for creating a collection of seminar papers and a collection of presentations.

1.7. Student work monitoring

Attendance	X	Activity in classes	X	Seminar paper	X	Experimental work	X
Written exam		Oral exam		Essay		Research	
Project		Continuous knowledge assessment	X	Report		Practical work	
Portfolio							

1.8. *Assessment and evaluation of student work during classes and at the final exam.*

Assessment:

- *Problem Task* – 50%
- *Seminar Paper* – 50%

Evaluation:

1. <i>Explain the fundamental principles and theories of marketing, strategies, and tactics within the seminar paper.</i> 2. <i>Use digital platforms and tools to promote products and services in a digital environment within the problem task.</i> 3. <i>Demonstrate how to segment the market for products and services and how to target specific segments using appropriate marketing strategies within the seminar paper.</i> 4. <i>Interpret how consumers perceive, decide, and react to marketing activities in the context of a multimedia presentation within the problem task.</i> 5. <i>Use analytical tools to measure the effectiveness of marketing campaigns within the problem task.</i> 6. <i>Recognize the importance of adapting marketing strategies to changing market trends in a globalized world within the problem task.</i>		
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Osnove marketinga / Adverta /2007./ Jozo Previšić, Đurđana Ozretić Došen</i>		
<i>Marketing malih i srednjih poduzeća / Naklada Ljevak / 2010./ Nataša Renko</i>		
1.10. <i>Supplementary literature</i>		
1.11. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
<i>Student survey, self-evaluation form, etc..</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Asst. Prof. Zoran Najdanović, PhD	
Course title	Fundamentals of entrepreneurship	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+0+1

COURSE DESCRIPTION
1.1. <i>Course objectives</i>

<i>The course "Basics of Entrepreneurship" provides students with fundamental knowledge about the opportunities and challenges that entrepreneurs face in the global market. Students will be introduced to key entrepreneurial principles, strategies, and practices. The program covers the development of business plans, financing and investment in projects, legal aspects of business, as well as marketing and distribution of products and services. The course also emphasizes the importance of sustainability and social responsibility in entrepreneurial initiatives.</i>		
1.2. Enrollment conditions		
1.3. Expected learning outcomes		
<i>Explain the basic concepts of entrepreneurship, including terminology such as business models, development strategies, and risk management.</i> <i>Differentiate tools for developing and optimizing business processes.</i> <i>Conclude on the development of business ideas.</i> <i>Explain financial planning, cost assessment, and return on investment analysis in companies.</i> <i>Adapt communication to the dynamics of teamwork in an entrepreneurial environment.</i> <i>Present business ideas and projects to various stakeholders</i>		
1.4. Course content		
<i>1. Introduction to Entrepreneurship: Overview of the history of entrepreneurship, its importance, and its role in society.</i> <i>2. Basics of Entrepreneurship: Understanding the fundamental concept of entrepreneurship, the development of startups, and innovative strategies.</i> <i>3. Technology and Digital Transformation: How digital technologies impact the graphic industry in multimedia and the opportunities they present for entrepreneurs.</i> <i>4. Entrepreneurial Financing: Methods of financing entrepreneurial projects, the role of accelerators and incubators, and sources of funding for startups.</i> <i>5. Product Development: Market research and segmentation, analysis of segments according to specified variables, targeting selected segments, and positioning users.</i> <i>6. Marketing and Sales: Understanding market trends, sales strategies, and marketing channels.</i> <i>7. Team Management and Leadership: The importance of teamwork, communication skills, and leadership in managing a successful entrepreneurial project.</i> <i>8. Risks and Challenges in Entrepreneurship: Analysis of potential challenges, internal and external risks faced by entrepreneurs.</i> <i>9. Case Studies and Practical Examples: Overview of successful entrepreneurial projects in multimedia and analysis of key factors for their success.</i> <i>10. Forecasting Future Trends, Technological Innovations, and Market Opportunities.</i>		
1.5. Types of Teaching Methods	☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_
1.6. Student obligations		

Actively participate in classes and online activities.

Prepare a seminar paper in accordance with the guidelines and assigned literature.

Supplement and revise the seminar paper according to reviews.

Participate in a joint project for creating a collection of seminar papers and a collection of presentations.

1.7. Student work monitoring							
Attendance	X	Activity in classes	X	Seminar paper	X	Experimental work	X
Written exam		Oral exam		Essay		Research	
Project		Continuous knowledge assessment	X	Report		Practical work	
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Attendance – 5%

Class Activity – 5%

Preparation of Seminar Paper – 90%

Assessment:

1. Explain the basic concepts of entrepreneurship in the form of a seminar paper, including terminology such as business models, development strategies, and risk management.
2. Differentiate tools for developing and optimizing business processes in the form of a seminar paper.
3. Conclude on the development of business ideas in the form of a seminar paper.
4. Explain financial planning, cost assessment, and return on investment analysis in companies in the form of a seminar paper.
5. Adapt communication to the dynamics of teamwork in an entrepreneurial environment in the form of a seminar paper.
6. Present business ideas and projects to various stakeholders in the form of a seminar paper.

1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
Title	Number of copies	Number of students
Osnove prava društava / Pravni fakultet, 2024., Siniša Petrović, Petar Ceronja		
Osnove poduzetništva / Školska knjiga / 2020. Damir Ribić, Nikolina Pleša Puljić		

1.10. Supplementary literature

1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies

Student survey, self-evaluation form, etc..

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Ana Nemec,	
Course title	English in multimedia and visual communications	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	Compulsory	
Year	I.	
ECTS credit and teaching method	ECTS credits	2
	Number of hours (L+E+S)	1+0+2

COURSE DESCRIPTION	
1.56.	<i>Course objectives</i>
<i>Course objectives are to provide students the insight into the differences between the general language and the language for specific purposes and to raise their awareness of the importance of English. The students are intensively drilled in their oral and written competence in the English language, which includes, among other things, the development of techniques for reading expert and scientific texts with characteristic structures and grammatical forms. Students will learn the basic and most common professional terms from the field of art and design and will recognize the special features of linguistic structures and textual features in the language of their future profession, while at the same time expanding their general vocabulary. An extremely important language skill is the ability to paraphrase words, phrases, parts of sentences and entire sentences. In addition, the students will constantly revise and deepen knowledge of grammar, especially patterns that are often used in expert and scientific discourse. Students are continuously encouraged to be independent in their education and work in English.</i>	
1.57.	<i>Enrollment conditions</i>
1.58.	<i>Expected learning outcomes</i>
<i>1. Extract key information from the text.</i> <i>2. Summarize the content of the processed text using acquired concepts and structures.</i> <i>3. Apply structures characteristic for the English language (gerunds, phrasal verbs, collocations).</i> <i>4. Explain concepts, words and patterns.</i> <i>5. Apply acquired professional terms, as well as general vocabulary in concrete situations at the level of speech and writing.</i>	
1.59.	<i>Course content</i>
<i>1. A brief history of Graphic Design I</i> <i>2. A brief history of graphic design II</i> <i>3. The Advent of Graphic Design I</i>	

4. *The advent of graphic design II*
5. *Vocabulary and grammar*
6. *The Emergence of the design industry*
7. *Twentieth Century Design*
8. *Bauhaus I*
9. *Bauhaus II*
10. *Application Skills in Design*
11. *Visual Arts and typography*
12. *Page Layout*
13. *Interface Design*
14. *User Experience Design*
15. *Vocabulary and grammar*

1.60.	Types of Teaching Methods		☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork		☒ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other	
1.61.	Student obligations					
Regular class attendance – 80 %						
1.62.	Student work monitoring					
Attendance	x	Activity in classes	x	Seminar paper		Experimental work
Written exam	x	Oral exam	x	Essay	x	Research
Project		Continuous knowledge assessment	x	Report		Practical work
Portfolio						
1.63.	Assessment and evaluation of student work during classes and at the final exam.					
Assessment: Regular class attendance - 20 % Activity in class - 20 % Submission of homework, essays and summaries - 20 % Exam – 40 % Evaluation: 1. Through oral and/or written communication extract key information from the text. 2. Through oral and/or written communication summarize the content of the processed text using acquired concepts and structures. 3. Through oral and/or written communication apply structures characteristic for the English language (gerunds, phrasal verbs, collocations). 4. Through oral and/or written communication explain concepts, words and patterns. 5. Through oral and/or written communication apply acquired professional terms, as well as general vocabulary in concrete situations at the level of speech and writing.						

1.64. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
Perfect English grammar	Unlimited, the source is available online	
British Council Learn English	Unlimited, the source is available online	
Oxford Learner's Dictionary	Unlimited, the source is available online	
Thesaurus	Unlimited, the source is available online	
Hollis, Richard: Graphic design: A concise history	2 selected chapters and excerpts will be included in the teaching materials	
Lupton, Ellen; Cole Phillips Jennifer: Graphic design: The new basics	1 selected chapters and excerpts will be included in the teaching materials	
1.65. <i>Supplementary literature</i>		
1.66. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
Student survey		

COURSE DESCRIPTION

GENERAL INFORMATION

Course leader	Ana Nemec	
Course title	German in multimedia and visual communications	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	I.	
ECTS credit and teaching method	ECTS credits	2
	Number of hours (L+E+S)	1+0+2

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>Considering the special features of German as a foreign language, the primary objective of the course is to emphasize the importance of German as the language of a homeland of numerous artistic directions and design schools whose influence on today's design is immeasurable. When working on texts, students will encounter professional terms in the field of graphic design and multimedia and thus learn to distinguish between general language and language for specific purposes. They will be drilled in oral and written competence in the German language. Since grammar is the backbone of every language, we will continuously work on revising and deepening the knowledge of grammar.</i> <i>The ultimate objective is to encourage students to become independent and confident in the use of German language.</i>
1.2. <i>Enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
<i>1. Extract key information from the text.</i> <i>2. Summarize the content of textual and audio-visual sources by using acquired concepts and structures.</i> <i>3. Translate concepts, words and structures into Croatian.</i> <i>4. Use the acquired terminology and general vocabulary in concrete situations at the level of speech and writing.</i>
1.4. <i>Course content</i>
<i>1. The History of Graphic Design</i> <i>2. Vocabulary and grammar</i> <i>3. The 8 Types of Graphic Design I</i> <i>4. The 8 Types of Graphic Design II</i> <i>5. The 8 Types of Graphic Design III</i> <i>6. Vocabulary and grammar</i> <i>7. Famous graphic designers I</i> <i>8. Famous graphic designers II</i> <i>9. Famous graphic designers III</i>

10. Vocabulary and grammar 11. Color, image, font 12. Typesetting and typography 13. Vocabulary and grammar 14. Corporate design 15. Revision								
1.5. Types of Teaching Methods				☒ Lectures ☒ Seminars and workshops ☐ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☐ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other			
1.6. Student obligations								
Regular class attendance – 80%								
1.7. Student work monitoring								
Attendance	x	Activity in classes	x	Seminar paper		Experimental work		
Written exam	x	Oral exam	x	Essay	x	Research		
Project		Continuous knowledge assessment	x	Report		Practical work		
Portfolio								
1.8. Assessment and evaluation of student work during classes and at the final exam.								
Assessment: Regular class attendance - 20% Activity in class - 20% Submission of homework, essays and summaries - 20% Exam - 40% Evaluation: 1. Through oral and/or written communication extract key information from the text. 2. Through oral and/or written communication summarize the content of textual and audio-visual sources by using acquired concepts and structures. 3. Through oral and/or written communication translate concepts, words and structures into Croatian. 4. Through oral and/or written communication use the acquired terminology and general vocabulary in concrete situations at the level of speech and writing.								
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course								
Title		Number of copies		Number of students				

Deutsche Grammatik	Unlimited, the source is available online	
Deutsche Welle	Unlimited, the source is available online	
DWDS	Unlimited, the source is available online	
Wäger, Markus: Grafik und Gestaltung	Unlimited, the source is available online	
Sergonne, Lou: Was ist Grafikdesign?	Unlimited, the source is available online	
<i>1.10. Supplementary literature</i>		
<i>1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
Student survey		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	prof. Klaudio Pap, PhD.	
Course title	Graphic programming languages	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	<i>III.</i>	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+1+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The goal of this course is to equip students with the understanding and application of graphic programming within coordinate systems, using stack-oriented graphic languages such as PostScript. Students will acquire</i>

skills in absolute and relative programming of lines and paths, creating and manipulating graphic shapes across multiple layers, and controlling the final shape and line joins. The course also covers programming of Bezier curves, coordinate system transformations, object fill control, memory management, and programmatic manipulation of text, fonts, and graphic shapes within different color spaces. The course aims to enable students to execute graphic solutions using graphic programming languages.		
1.2. Enrollment conditions		
Attended course Digital multimedija and Fundamentals of Computing and Programming		
1.3. Expected learning outcomes		
1. Differentiate coordinate system transformations from the deformation of graphic shapes 2. Construct programs for lines, curves, arcs, and other types of vector paths 3. Use conditional statements, loops, arrays, and functions in a graphic programming language 4. Design programmatic graphic elements in various color systems and graphic states 5. Apply memory usage optimization through programmatic control of stack memory in printing devices 6. Apply programmatic control over fonts and text		
1.4. Course content		
1. Graphic and Print Coordinate Spaces: Definition and understanding of graphic and print coordinate spaces, as well as programming the coordinate grid. 2. Graphic Page and Measurement Units: Concept of a graphic page, associated measurement units, and their application in programming. 3. Stack-Oriented Graphic Languages: Rules for writing commands and parameters in a stack-oriented graphic language, with a focus on the PostScript language. 4. Line and Path Programming: Absolute and relative programming of lines and paths, closing paths, and filling them. 5. Working with Layers and Graphic Shapes: Creating graphic shapes on multiple levels (layers), grouping shapes, and manipulating layers. 6. Control of Lines and Shapes: Control of line endings, line joins, line dashing, and programming circular and tangent shapes. 7. Bezier Curves: Mathematical foundation of Bezier curves, types of joins, joining with tangent curves, and application in graphic programming. 8. Coordinate System Transformations: Rotations, translations, horizontal and vertical transformations within the coordinate system. 9. Fill Control and Transparency: Programming object fills, object "holes," path orientation, and multiple transparencies. 10. Stack Memory Management and Operators: Arithmetic and logical operators in PostScript, stack memory management, and program loops. 11. Gradients and Color Spaces: Programming tonal gradients in RGB, CMYK, and HSB color spaces. 12. Text and Font Manipulation: Individual manipulation of characters, converting outlines into vector paths, and controlling fonts and text in the PostScript language.		
1.5. Types of Teaching Methods	☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education	☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other

				☐ Fieldwork			
1.6. Student obligations							
Attendance of 70% of classes.							
1.7. Student work monitoring							
Attendance	X	Activity in classes		Seminar paper		Experimental work	
Written exam		Oral exam	X	Essay		Research	
Project		Continuous knowledge assessment	X	Report		Practical work	X
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
Grading: Written exam – 60% or through continuous assessment (colloquium). Colloquium 1 – 30% Colloquium 2 – 30% Class participation – 40% Evaluation: 1. In exercises, distinguish between coordinate system transformations and the deformation of graphic shapes. 2. In exercises, construct programs for lines, curves, arcs, and other types of vector paths. 3. In exercises, use program branching, loops, arrays, and functions in a graphical programming language. 4. In exercises, design graphical program elements in different color systems and graphical states. 5. In exercises, apply memory usage optimization through program control of stack memory in output devices. 6. In exercises, apply program control of fonts and text.							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
V. Žiljak, K. Pap, POSTSCRIPT PROGRAMIRANJE GRAFIKE, FS, Zagreb, 1998. /2004. Tiskovno izdanje: ISBN: 953 - 199 – 000, Elektr. izdanje: http://free-zg.htnet.hr/kpap/							
Adobe Systems: „PostScript Language Reference Manual”, Addison-Wesley, 1985							
1.10. Supplementary literature							
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies							
Student survey, self-evaluation form, etc..							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	prof. Klaudio Pap, PhD.	
Course title	Interactive Web Programming	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	<i>II.</i>	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The aim of the course is to equip students with the skills to effectively create interactive and dynamic web content, with a particular focus on understanding and implementing events in various time frames and according to user requirements. Students will learn to categorize and apply different elements of web forms, integrate multimedia content, and create animations and complex web structures. Special emphasis will be placed on analyzing and manipulating elements using the DOM model, providing students with the foundational knowledge required for advanced web development.</i>
1.2. <i>Enrollment conditions</i>
<i>Attended course Fundamentals of Computing and Programming</i>
1.3. <i>Expected learning outcomes</i>
1. Create interactive web content. 2. Differentiate events and their triggering in time and on demand. 3. Categorize web form elements and their functions. 4. Integrate multiple multimedia contents on a web page. 5. Develop simple programmatic animations, multi-level positioning, and linking of web elements. 6. Analyze elements according to the DOM model.
1.4. <i>Course content</i>
1. Understanding the Document Object Model (DOM) as a programming interface for interactive programming. 2. Using variables, arrays, arithmetic operators, loops, and conditional statements for interactive content display. 3. Controlling system objects for date and time to create interactive web clocks. 4. Programmatically detecting the web browser and version, and dynamically applying compatible commands accordingly.

5. Triggering programs and desired changes through various programming and user interactions (event triggering).
6. Programmatic control of web links via the object model. Programmatic control of image web objects.
7. Programming image and object swaps (rollover effect).
8. Types of web form elements and their hierarchical programmatic control. Creating an interactive web calculator.
9. Creating multiple types of interactive web quizzes with positive and negative logic for question delivery.
10. Creating and controlling an interactive smart web form with validation.
11. Using associative arrays for various types of interactive menus, color palettes, smart directories, and dictionaries.
12. Controlling timed events and time loops to create various types of slideshow effects.
13. Interactive work with windows and frames and control of objects within them.
14. Multi-level positioning and hiding of web elements.
15. Pseudo-animation of web elements using a pseudo-random number generator.

1.5. Types of Teaching Methods

- | | |
|--|--|
| ☒ Lectures | ☒ Independent tasks |
| ☐ Seminars and workshops | ☒ Multimedia and network |
| ☒ Exercises | ☒ Laboratory |
| ☒ Online education | ☐ Mentorship |
| ☐ Fieldwork | ☐ Other_ |

1.6. Student obligations

Regular class attendance – lectures and 80% attendance in exercises.

1.7. Student work monitoring

Attendance	X	Activity in classes		Seminar paper		Experimental work	
Written exam		Oral exam	X	Essay		Research	
Project		Continuous knowledge assessment	X	Report		Practical work	X
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Grading:

Class attendance: 10%

Continuous assessment: 70%

Project work during exercises: 20%

Evaluation:

1. In exercises, the student will construct interactive web content.
2. In continuous knowledge assessment and/or oral exams, demonstrate the differentiation of events and their triggering in time and on demand.
3. In continuous knowledge assessment and/or oral exams, the student will categorize web form elements and their functions.

4. In exercises, the student will link multiple multimedia content to a web page.		
5. In exercises, the student will create animations, multi-level positioning, and links between web elements.		
6. In continuous knowledge assessment and/or oral exams and/or exercises, demonstrate the breakdown of elements according to the DOM model.		
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Dean, John, Web programming : with HTML5, CSS, and JavaScript / John Dean. Burlington : Jones & Bartlett Learning, 2019.</i>		
<i>Reid, T. Valentine: JavaScript Programmer's Reference, ISBN 978-1-4302-463 0-5, ISBN 978-1-4302-463 0-5 (e-book), 2013</i>		
<i>A. Freeman: " Pro Javascript for Web Apps", ISBN 978-1-4302-4461-5, 2012</i>		
1.10. Supplementary literature		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form, etc..		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	prof. Klaudio Pap PhD., Assoc. prof. Maja Rudolf, PhD	
Course title	Digital multimedia	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	<i>I.</i>	
ECTS credit and teaching method	ECTS credits	<i>4</i>
	Number of hours (L+E+S)	<i>2+2+0</i>

COURSE DESCRIPTION	
1.67.	<i>Course objectives</i>

<i>The aim of this course is to provide students with fundamental knowledge and skills necessary for understanding and applying digital multimedia. Through the study of the basic components of digital text, image, sound, video, and animation, students will acquire key concepts such as the em square, vector and raster graphics, Bezier curves, as well as digital transformations and filtering. Additionally, students will gain an understanding of digital image processing, histogram analysis, and the integration of multimedia elements into web content through the use of basic HTML and CSS elements.</i>							
1.68. Enrollment conditions							
1.69. Expected learning outcomes							
1. Classify the basic components of digital multimedia 2. Distinguish between vector, pixel, and raster image formats 3. Use different types of encoding for digital information in various digital media 4. Utilize graphic tools for basic editing and integration of digital multimedia content 5. Differentiate between various color digitization systems in a digital multimedia environment 6. Use software tools for basic digital transformations and filtering of digital images							
1.70. Course content							
1. Introduction to Digital Multimedia: Overview of the basic components of digital multimedia and their significance in modern media. 2. Em square, digital baseline and font as an ordered set of em squares. 3. Digital image: Basics and Types: Definitions of vector, pixel, and raster images; differences between them and their applications. 4. Bezier curves and vector graphics 5. Digital vector path 6. Digital image elements 7. Digital transformations and image filtering 8. Use of histograms in redistributing n-channel encoded grayscale in digital images. 9. Digital rasterization and color digitization 10. Basic techniques for integrating text, images, sound, video, and animation into multimedia content. 11. Defining basic HTML elements and attributes for creating multimedia web content. 12. Basic set of CSS commands and their application in presenting multimedia content on the web.							
1.71. Types of Teaching Methods				☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork		☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_	
1.72. Student obligations							
Attendance at 70% of the classes.							
1.73. Student work monitoring							
Attendance	X	Activity in classes		Seminar paper		Experimental work	

Written exam		Oral exam	X	Essay		Research	
Project		Continuous knowledge assessment	X	Report		Practical work	X
Portfolio							

1.74. *Assessment and evaluation of student work during classes and at the final exam.*

Grading:
Written exam – 60% or through continuous assessment (colloquium).
Colloquium 1 – 30%
Colloquium 2 – 30%
Class participation – 40%

Evaluation:
1. *In written form as part of continuous assessment or in a written exam, classify the basic components of digital multimedia.*
2. *In written form, differentiate between vector, pixel, and raster image formats.*
3. *In exercises, use various types of encoding for digital information across different digital media.*
4. *In exercises, use graphic tools for basic processing and integration of digital multimedia content.*
5. *In written form as part of continuous assessment or in a written exam, differentiate between various color digitization systems in a digital multimedia environment.*
6. *In exercises, use software tools for basic digital transformations and filtering of digital images.*

1.75. *Mandatory literature and number of copies available in relation to the number of students currently attending the course*

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>ed. John G. Webster, Multimedia Encyclopedia of Electrical and Electronics Engineering, V 37, 1999, Multimedia, 1999</i>		
<i>Jesse S. Jin, Changsheng Xu, Min Xu, The Era of Interactive Media, ISBN 978-1-4614-3500 6, 2013., Springer</i>		
<i>V. Žiljak, K. Pap, POSTSCRIPT PROGRAMIRANJE GRAFIKE, FS, Zagreb, 1998. /2004. Tiskovno izdanje: ISBN: 953 - 199 – 000</i>		
<i>ed. John G. Webster, Multimedia Encyclopedia of Electrical and Electronics Engineering, V 37, 1999, Multimedia, 1999</i>		

1.76. *Supplementary literature*

1.77. *Methods for monitoring the quality of acquired knowledge, skills, and competencies*

Student survey, self-evaluation form, etc..

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Suzana Pasanec Preprotić, PhD Prof. Maja Strgar Kurečić, PhD Prof. Igor Zjakić, PhD	
Course title	Introduction to Graphic Technology	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>compulsory</i>	
Year	I.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+0+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>Introducing students to the basic concepts and professional terminology in the field of graphic technology will enable them to understand and identify the production processes involved in creating various graphic products. By acquiring fundamental knowledge about the types and characteristics of different graphic products, materials, and media, students will be able to describe and define the basic parameters of graphic products for their production and/or presentation, as well as critically comment on the success of selected products. In addition to gaining basic knowledge and concepts within the diverse graphic industry, students are encouraged to explore their specific areas of interest, follow trends, and utilize scientific and professional literature.</i>
1.2. <i>Enrollment conditions</i>
<i>No conditions.</i>
1.3. <i>Expected learning outcomes</i>
1. <i>Explain the basic concepts in the field of the graphic industry.</i> 2. <i>Classify the basic products, materials, and media of the graphic industry.</i> 3. <i>Select production processes based on the type and purpose of the graphic product.</i> 4. <i>Create a description (snapshot) of the graphic product for the purpose of its production and/or presentation.</i>
1.4. <i>Course content</i>
1. <i>Reproduction process workflow and the role of graphic preparation.</i> 2. <i>Principle of color reproduction.</i> 3. <i>Differences in graphic preparation for print and preparation for the web.</i>

4. Typical errors in graphic preparation - examples from practice.
5. Dividing of printing techniques and printing and digital media
6. Basic principles in conventional and digital printing techniques.
7. Basic of production process.
8. Principles of printing quality management.
9. Classification of graphic products, the role, and definition of finishing production.
10. Materials in graphic production.
11. Basic processes, tools, equipment, and machines in finishing graphic production.
12. Characteristics of graphic products and finishing processes concerning scale volume production.

1.5. Types of Teaching Methods

- | | |
|--|---|
| ☒ Lectures | ☐ Independent tasks |
| ☐ Seminars | ☐ Multimedia and network |
| ☐ Exercises and workshops | ☐ Laboratory |
| ☒ Online education | ☐ Mentorship |
| ☐ Fieldwork | ☒ Other |

1.6. Student obligations

Mandatory attendance at lectures.
Active participation in online activities.
Exam access conditions: minimum attendance at 70% of classes and the least completed 80% of online activities.

1.7. Student work monitoring

Attendance	x	Activity in classes		Seminar paper		Experimental work	
Written exam	x	Oral exam		Essay		Research	
Project		Continuous knowledge assessment		Report		Practical work	
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Assessment:

Test 1 - Prepress graphic production – 30%
Test 2 – Main graphic production – 30%
Test 3 – Postpress graphic production – 30%
Written exam – 85% (or Test 1 + Test 2 + Test 3)
Online activity – 10%
Class attendance – 5%

Evaluation:

Online activities continuously assess student participation, understanding, and acquisition of basic concepts in graphic industry.

<i>Through online activities and in written form, students identify and classify basic products of the graphic industry.</i> <i>In written form, students explain and select appropriate production processes depending on the type of graphic product.</i> <i>In written form and through class participation, students make a description of the graphic product for the purpose of its production and/or presentation.</i>		
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>R.Thompson, Graphics and Packaging Production, London, UK, Thames & Hudson, 2012.</i>	1	200
<i>H. Kipphan, Handbook Of Print Media, Berlin, Springer, 2001.</i>	dostupno online	200
<i>R. Hembree, The Complete Graphic Designer, Beverly, MA, US, Rockport Publishers, 2011.</i>	dostupno online	200
<i>I. Zjakić, Upravljanje kvalitetom ofsetnog tiska, Zagreb, Hrvatska sveučilišna naklada, 2011.</i>	23	200
<i>I.Zjakić, Tehničko uređivanje u procesu izrade knjige, Zagreb, Hrvatska sveučilišna naklada, 2013.</i>	13	200
1.10. <i>Supplementary literature</i>		
1. <i>M. Rešetar, Papir proizvodnja, svojstva, primjena, Osijek, 2001.</i>		
2. <i>M. Enroth, Tools for eco-efficiency in the printing industry, Royal Institut of Technology Stocholm, 2001.</i>		
3. <i>F. Mesaroš, Tipografski priručnik, Zagreb, 1985.</i>		
4. <i>EduKon, Abeceda za grafičare, Zagreb 2020.</i>		
1.11. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
<i>Student survey and self-evaluation form.</i>		

COURSE DESCRIPTION

GENERAL INFORMATION	
Course leader	Prof. Jesenka Pibernik, PhD
Course title	WEB design
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>
Course status	Compulsory

Year	II.	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION	
1.1. <i>Course objectives</i>	
The goal of the course is to train students to independently create simple, functional, attractive and useful websites. In the course, students will plan and design the content, structure and interface of web pages, design user interaction with the interface, identify and apply methods of user-oriented design process. By mastering this course, students will be able to apply and integrate appropriate typography, images, icons and video to create a unique web design of a certain style. Through this course, students will be trained to independently design web pages as well as to test web pages using user-oriented design methods.	
1.2. <i>Enrollment conditions</i>	
Attended course Digital multimedia	
1.3. <i>Expected learning outcomes</i>	
1. Design a simple and functional website. 2. Apply user-oriented design process methods. 3. Test web pages using user-oriented design methods. 4. Testing the prototype on a real target group of users.	
1.4. <i>Course content</i>	
1. Website development process using user-oriented design methods. 2. Defining the target audience, personas, mapping the user journey. 3. Defining purpose and goals; the beginning of creating website documentation - defining goals, researching future users (setting up a survey, conducting interviews) and shaping the results of the research. 4. User scenario and task analysis; the beginning of designing the first individual page on the exercises. 5. Creation of sketches/LOFI wireframes 6. Design principles. Group work: card sorting and testing trees for the final website. Inclusion of testing in project documentation 7. Conceptual sketches; creation of flowcharts, user journey and CX map 8. Making prototypes; group/individual work: creation of HIFI wireframes, functional prototype of the site 9. Hierarchical organization, networks; group/individual work: testing of prototypes on the actual target group of users - documentation and presentation of test results obtained, modification of wireframes according to test results 10. Organization of navigation; designing an individual website according to wireframes in the software of your choice 11. Colors for the web; documentation/design/wireframe corrections 12. Web typography; individualization of sound and tone (way of addressing users, "human interface") 13. Form design; full specification of an individual website 14. Icon design; website evaluation, user testing	

1.5. <i>Types of Teaching Methods</i>				☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork	☐ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_
1.6. <i>Student obligations</i>					
Students are expected to participate in weekly discussions and critical reviews of lectures and exercises. Activity in class and regular completion of tasks and a collaborative approach is an important component of the final grade. Students are required to bring a sketchbook to lectures and exercises - a notebook without lines and colored pencils.					
1.7. <i>Student work monitoring</i>					
Attendance	x	Activity in classes	x	Seminar paper	Experimental work
Written exam		Oral exam		Essay	Research
Project	x	Continuous knowledge assessment		Report	Practical work
Portfolio					
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>					
Evaluation: Solved project tasks (4) and final project (in the group) – 75% Attendance and activity in classes (lectures and exercises) – 25% Evaluation: 1. As part of the project assignment in the exercises, students will design simple and functional websites. 2. As part of the project assignment in the exercises, students will apply user-oriented design methods. 3. As part of the project assignment in the exercises, students will test websites using user-oriented design methods. 4. As part of the project assignment in the exercises, students will test prototypes on a real target group of users.					
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>					
<i>Title</i>		<i>Number of copies</i>		<i>Number of students</i>	
Caddick R., Cable S., Communicating the User Experience, Wiley 2011.					
Garrett J. J., The Elements of User Experience, New Riders, 2011.					
Barnum C. M., Usability Testing Essentials, Elsevier, 2011.					

1.10. Supplementary literature
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies
Students are asked to actively participate (post links and resources) and post their progress on SILK during the semester. With the final presentation, students demonstrate the level of acquired knowledge, skills, and competencies.

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Maja Rudolf, PhD	
Course title	Information visualization	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	II.	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	1+2+0

COURSE DESCRIPTION
1.1. Course objectives
<i>The aim of the course is to understand the processes and methods of visual presentation of information in a multimedia environment. Students will learn the basic principles of information visualization, critically evaluate existing ones, and design their own visualizations. Theoretical knowledge will be based on the development of visualizations, classification, types of data and methods of their digital display. Scalable visualizations will be created through existing and self-collected data sets using scripting and programming languages and other open-source tools. Development of skills in data preparation, their valorization and selection of suitable display (graphs, dashboards and visualization of spatial data - digital cartography).</i>
1.2. Enrollment conditions
<i>There are no conditions for enrolling in the course. Required entry competences: knowledge of multimedia technologies and tools</i>
1.3. Expected learning outcomes
1. Classify data and information according to their type and presentation method 2. Analyze the collected sets of digital data 3. Choose the appropriate visual interpretation according to the type of data 4. Use scripting and programming languages and open-source tools for preparing, structuring, designing and formatting data for visualization
1.4. Course content

1.5. <i>Types of Teaching Methods</i>				☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☒ Other
1.6. <i>Student obligations</i>					
<i>Mandatory attendance at lectures and exercises and active participation in classes and online activities.</i> <i>Use of online platforms for communication, consultation, and delivery of materials and tasks.</i> <i>Use of multimedia tools and online resources for teaching and access to additional materials.</i> <i>Written colloquium, first project assignment and final project assignment.</i> <i>Condition for taking the exam: minimum attendance at 50% of lectures and 80% of exercises, completed and presented final project assignment.</i>					
1.7. <i>Student work monitoring</i>					
Attendance	X	Activity in classes	X	Seminar paper	Experimental work
Written exam	X	Oral exam	X	Essay	Research
Project	X	Continuous knowledge assessment	X	Report	Practical work
Portfolio					
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>					
<i>Grading:</i> <i>1. Attendance and activity in class – 10%</i> <i>2. Colloquium 1 – 20%</i> <i>3. Project assignment 1 – 20%</i> <i>4. Creation and presentation of the final project assignment – 50%</i> <i>Evaluation:</i> <i>1. As part of the exercises and the written colloquium, students will classify data and information according to their type and presentation method</i> <i>2. As part of the exercises, students will analyze the collected sets of digital data</i> <i>3. As part of the exercises and the first project assignment, students will choose the appropriate visual interpretation according to the type of data based on the data classification.</i> <i>4. As part of the exercises and the final project assignment, students will independently use scripting and programming languages and open-source tools for the preparation, structuring, design and formatting of data for visualization</i>					
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>					

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
<i>Lupton, E. Design is storytelling, Cooper Hewitt, Smithsonian Design Museum, 2017, ISBN 978-1942303190</i>	<i>1</i>	<i>50</i>
<i>Cook, P. D3 in Depth – online https://www.d3indepth.com/</i>		<i>50</i>
<i>Wickham H., Çetinkaya-Rundel M., Golemund, G. R for Data Science, 2nd Edition, O'Reilly Media, Inc. ISBN: 9781492097402 online https://r4ds.hadley.nz</i>		<i>50</i>
<i>1.10. Supplementary literature</i>		
<i>1. Rendgen, S. et.al. Information Graphics, Taschen, 2012, ISBN 978-3836528795</i>		
<i>2. Tufte E., The Visual Display of Quantitative Information, Graphics Pr; 2nd edition, 2001, ISBN 978-1930824133</i>		
<i>1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
<i>Continuous monitoring of all student activities in the course through online platforms, self-evaluation of students through self-evaluation forms, evaluation of courses and teachers through student surveys. Information about achieved learning outcomes is used for self-evaluation of teachers and improvement of work methods.</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Tibor Skala, PhD	
Course title	Creative programming for interactive media	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	II.	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
<i>1.1. Course objectives</i>
<i>The goal of the course is to equip students with a fundamental understanding of programming through Scratch and Python. Students will first use Scratch to learn basic programming concepts, followed by Python for procedural and object-oriented programming. They will learn to design and implement interactive media applications using various tools for graphics and animations. The course encourages creativity, innovation,</i>

and critical thinking through the analysis and evaluation of user experience. The project work provides practical application of acquired knowledge, preparing students for further learning and professional development in interactive media.							
1.2. Enrollment conditions							
1.3. Expected learning outcomes							
1. Explain the fundamental programming concepts, such as variables, conditional statements, and loops, using Scratch and Python. 2. Apply interactive media applications and games using Scratch and Python. 3. Apply techniques of procedural and object-oriented programming. 4. Implement creative and innovative solutions that combine technical skills with artistic expression. 5. Recognize different approaches in the design of interactive media.							
1.4. Course content							
1. Introduction to Creative Programming 2. Basics of Visual Programming 3. Creative Coding with Python 4. Multimedia Production 5. Fundamentals of Animation and Visualization 6. Interactivity and User Interface 7. Prototyping Interactive Media Systems 8. Working with Real-time Data 9. Basics of Virtual and Augmented Reality 10. Project Work							
1.5. Types of Teaching Methods				☒ Lectures ☒ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork		☒ Independent tasks ☒ Multimedia and network ☒ Laboratory ☐ Mentorship ☐ Other_	
1.6. Student obligations							
Mandatory attendance for lectures and exercises. Exam eligibility requirement: a minimum of 50% attendance in classes and 50% completion of exercises. A project assignment must be completed.							
1.7. Student work monitoring							
Attendance	x	Activity in classes	x	Seminar paper		Experimental work	x
Written exam		Oral exam		Essay		Research	x

Project	x	Continuous knowledge assessment	x	Report		Practical work	x
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
<i>Grading:</i> ● <i>Homework and lab exercises: Regular assignments and exercises that will track student progress (30%).</i> ● <i>Projects and group work: Evaluation of group project work, including creativity, technical execution, and presentation (40%).</i> ● <i>Midterms and final exam: Written and/or oral exams covering both theoretical and practical material (30%).</i> <i>Evaluation:</i> 1. <i>In written form, through continuous knowledge assessment, explain the fundamental programming concepts, such as variables, conditional statements, and loops, using the Scratch and Python programming languages.</i> 2. <i>Apply interactive media applications and games using programming languages in the exercises.</i> 3. <i>Apply procedural and object-oriented programming techniques during the exercises.</i> 4. <i>Implement solutions in the project assignment that combine technical skills with artistic expression.</i> 5. <i>Analyze different approaches in interactive media design during exercises and project work.</i>							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
Python Programming: An Introduction to Computer Science, Fourth Edition by John M. Zelle, Franklin, Beedle & Associates, 2024.		1					
Uvod u programiranje, Vedran Mornar, Element, 2021.		1					
Contingent Computation: Abstraction, Experience, and Indeterminacy in Computational Aesthetics, M. Beatrice Fazi, Rowman & Littlefield Publishers, 2018.		1					
1.10. Supplementary literature							
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies							
Student survey, self-evaluation form.							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Tibor Skala, PhD; Asst. Prof. Marko Maričević, PhD	
Course title	Fundamentals of Computing and Programming	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	I.	
ECTS credit and teaching method	ECTS credits	5
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>This course provides students with an introduction to concepts in computing, programming and their applications in digital media and multimedia applications. Students will acquire fundamental knowledge of computer system architecture, digital number systems, and Boolean algebra, as well as basic logic circuits such as AND, OR, and NOT, in the context of modern computer systems. Additionally, they will be introduced to key components of computer systems such as registers, buses, and various types of memory circuits and processors.</i> <i>The course covers the basics of operating systems, algorithms, and data structures, with a focus on learning programming through Python. Special attention is given to human-computer interaction and the fundamentals of multimedia technologies.</i> <i>The goal of the course is to equip students with an understanding of the key principles of computing and programming through practical tasks in Python, with an emphasis on applying the acquired knowledge to the creation of digital solutions and multimedia applications.</i>
1.2. <i>Enrollment conditions</i>
1.3. <i>Expected learning outcomes</i>
<i>Understand the fundamental concepts of computer architecture.</i> <i>Apply Boolean algebra and digital number systems.</i> <i>Apply basic programming skills through Python.</i> <i>Differentiate between analog and digital media.</i> <i>Develop basic human-computer interaction skills using multimedia technologies.</i>
1.4. <i>Course content</i>
<i>Introduction to Computer Architecture and Computer Science</i> <i>Number Systems in Computing and Data Representation</i> <i>Fundamentals of Boolean Algebra</i>

4. *Analog and Digital Technology*
5. *Human-Computer Interaction*
6. *Fundamentals of Digital Media*
7. *Basics of Algorithms and Data Structures*
8. *Introduction to Modular Programming and Code Structure*
9. *Introduction to Object-Oriented Programming*
10. *Development Environment in the Python Programming Language*
11. *Development of Interactive Applications*

1.5. <i>Types of Teaching Methods</i>				☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork		☒ Independent tasks ☒ Multimedia and network ☒ Laboratory ☐ Mentorship ☐ Other_	
1.6. <i>Student obligations</i>							
<i>Mandatory attendance for both lectures and exercises.</i> <i>Exam eligibility requirements: a minimum of 50% attendance in classes and 50% completion of exercises. A project assignment must be completed.</i>							
1.7. <i>Student work monitoring</i>							
Attendance	x	Activity in classes	x	Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project	x	Continuous knowledge assessment	x	Report		Practical work	x
Portfolio							
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
<i>Grading:</i> <i>Exercises - 50%</i> <i>Project Assignment - 20%</i> <i>Continuous Knowledge Assessment - 30%</i> <i>Evaluation:</i> <i>In written form during continuous knowledge assessment, explain the basic concepts of computer architecture.</i> <i>In written form during continuous knowledge assessment, differentiate between analog and digital media and explain the basic characteristics of audio, video, and image digital formats.</i> <i>During exercises, apply basic programming skills in Python to solve simple problems.</i>							

4. <i>In written form during continuous knowledge assessment, differentiate between analog and digital media and explain the basic characteristics of digital formats.</i>		
5. <i>During lab exercises and project assignment, develop basic human-computer interaction skills through interactive applications and multimedia technologies.</i>		
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
Paul Barry, Head First Python: A Learner's Guide to the Fundamentals of Python Programming, A Brain-Friendly Guide, O'Reilly Media, 2023.	0	
John L. Hennessy i David A. Patterson, Computer Architecture: A Quantitative Approach, Morgan Kaufmann, 2023.	0	
Charles Petzold, Code: The Hidden Language of Computer Hardware and Software, Microsoft Press, 2023.	0	
1.10. <i>Supplementary literature</i>		
1.11. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
<i>Student survey, self-evaluation form.</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Tibor Skala, PhD; Asst. Prof. Marko Maričević, PhD	
Course title	Game Development and Design	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The goal of the course is to equip students with the skills to develop computer games through a fundamental understanding of game concept creation and design. Students will learn to design and implement 2D and 3D</i>

games using modern programming languages and game engines. The course encourages creativity and innovation, allowing students to develop their own ideas and turn them into functional computer games. Students will develop skills in game experience design, game analysis and evaluation, and teamwork. The course also prepares students for further education and professional development in the gaming industry, providing solid technical and design foundations.		
1.2. Enrollment conditions		
1.3. Expected learning outcomes		
1. Explain the fundamental concepts of computer game development. 2. Design various types of computer games, including 2D and 3D games, using appropriate game engines and graphic libraries. 3. Demonstrate engaging and balanced gameplay mechanics, as well as intuitive user interfaces. 4. Apply basic principles of level design, including level structure, challenge placement, and story integration into the game. 5. Create solutions that combine technical skills with design principles. 6. Analyze computer games, including reflecting on design, gameplay, and user experience.		
1.4. Course content		
1. Introduction to Game Development. Basic concepts and terms in game development. Overview of the history and evolution of video games. 2. Basics of Game Programming. Introduction to programming languages used in game development (e.g., C#, Python). Installation and setup of the development environment (Unity, Unreal Engine). Writing simple programs and scripts for games. 3. Graphics and Animation in Games. Fundamentals of 2D and 3D graphics. Creation and manipulation of graphic elements. Introduction to character and object animation. 4. Gameplay Design. Basics of gameplay mechanics: game rules, goals, challenges. Designing interactivity and user interface. Balancing and optimizing the gameplay experience. 5. Game Development with Unity/Unreal Engine. Working with Unity or Unreal Engine for game development. Creating and setting up scenes, objects, and characters. Writing and implementing scripts for gameplay functionalities. 6. Level Design. Principles of level design: structure, challenges, guiding the player. Integrating story into level design. Tools for level design and mapping. 7. Sound and Music in Games. Introduction to sound effects and music for games. Tools for creating and manipulating sound. Integrating sound and music into the game. 8. Testing and Optimization. Game testing methods: alpha and beta testing. Identifying and fixing bugs. Optimizing game performance.		
1.5. Types of Teaching Methods	☒ Lectures ☒ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other_

1.6. Student obligations							
<i>Mandatory attendance for lectures and exercises.</i> <i>Exam eligibility requirement: a minimum of 50% attendance in classes and 50% completion of exercises. A project assignment must be completed.</i>							
<i>Regular attendance in lectures and lab exercises:</i> ● <i>Students are required to actively participate in lectures and labs in order to understand the key concepts of game development, including programming, level design, and gameplay mechanics. Attendance is mandatory for at least 75% of all lectures and exercises.</i>							
<i>Participation in project work:</i> ● <i>Students are required to participate in individual and group projects that involve designing and developing computer games from concept to final version. Projects will be evaluated based on creativity, technical execution, user experience, and innovation.</i>							
1.7. Student work monitoring							
Attendance	x	Activity in classes	x	Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	x
Project	x	Continuous knowledge assessment	x	Report		Practical work	x
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
<i>In written form, the student will explain the fundamental concepts of game development.</i> <i>During lab exercises, the student will design various types of computer games, including 2D and 3D games, using appropriate game engines and graphic libraries.</i> <i>During lab exercises, the student will demonstrate gameplay mechanics, including level structure, challenge placement, and story integration into the game.</i> <i>As part of the project assignment, the student will create solutions that combine technical skills with design principles.</i> <i>During lab exercises and the project assignment, students will analyze computer games, reflecting on design, gameplay, and user experience.</i>							
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course							
Title		Number of copies		Number of students			
1.10. Supplementary literature							
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies							
Student survey, self-evaluation form.							

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Nikolina Stanić Loknar, PhD, Assoc. Prof. Tajana Koren Ivančević, PhD	
Course title	Graphic composition for digital media	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	II.	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
<i>The aim of the course is to introduce students to the extensive world of graphic preparation for digital media. Digital media will be defined and compared. Topics for which graphic preparation will be made through project tasks will be determined. Content for digital media will be planned and created. It will also be planned how to maintain a consistent style through different digital media. Prototypes will be made. Basic computer coding for web design and user interfaces will be performed. The process of creating an advertisement for digital media will be planned. Equipping video content with text, graphics and 3D elements.</i>
1.2. <i>Enrollment conditions</i>
<i>Attended course Digital multimedia</i>
1.3. <i>Expected learning outcomes</i>
1. <i>Design content for digital media.</i> 2. <i>Use graphic programs for image processing and text layout.</i> 3. <i>Plan graphic preparation for different digital media.</i> 4. <i>Present the planned message and graphic solution.</i>
1.4. <i>Course content</i>
1. <i>Introduction to the extensive world of graphic preparation for digital media.</i> 2. <i>Definition and differentiation of digital media.</i> 3. <i>Determining the focus and defining the message that is intended to be placed.</i> 4. <i>Planning and creating content. Selection of fonts, colors and styles.</i> 5. <i>Maintaining a consistent style across different media.</i> 6. <i>Creation of prototypes.</i> 7. <i>Performing basic computer coding for web design and user interfaces.</i> 8. <i>Content Update.</i> 9. <i>Planning and creating advertising for digital media.</i> 10. <i>Equipping video content with text, graphics and 3D elements.</i>

1.5. Types of Teaching Methods				☒ Lectures ☐ Seminars ☒ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other
1.6. Student obligations					
Attendance at classes. Creation of the project assignment.					
1.7. Student work monitoring					
Attendance	X	Activity in classes	X	Seminar paper	Experimental work
Written exam		Oral exam	X	Essay	Research
Project	X	Continuous knowledge assessment		Report	Practical work
Portfolio					
1.8. Assessment and evaluation of student work during classes and at the final exam.					
Components of obligations (in %) in the final assessment: • Activity in class 15% • Creation and presentation of the project assignment 50% • Knowledge check oral exam 35% The final grade is obtained as follows: 90-100 = 5 (excellent) 75-89.9 points = 4 (very good) 60-74.9 points = 3 (good) 50-59.9 points = 2 (enough) 0-49.9 points = 1 (insufficient) Evaluation: As part of the exercises, students will design content for digital media. As part of the exercises, students will use graphic programs for image processing and text breaking. As part of the project assignment, students will plan graphic preparation for various digital media. During the lecture, students will present the planned message and graphic solution.					
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course					
Title		Number of copies		Number of students	
Bob Gordon and Maggie Gordon. 2002. The Complete Guide to Digital Graphic Design. Watson-Guptill Publications, Inc., USA.					

<i>Yue-Ling Wong. 2015. Digital Media Primer 3rd Edition, Pearson; 3rd edition</i>		
<i>Fabio Staiano. 2023. Designing and Prototyping Interfaces with Figma - Second Edition: Elevate your design craft with UX/UI principles and create interactive prototypes. Packt Publishing; 2nd ed. edition</i>		
1.10. Supplementary literature		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
<i>Performance quality monitoring is ensured by: a) a student survey; b) on the basis of student evaluations and assessment of students' performance on the exam; c) anonymous evaluation of teachers and associates at the end of the program; d) the modernity of the topic and the quality of written works within the framework of scientific and professional works and the readiness of students for desirable but optional forms of engagement during studies (research, etc.)</i>		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Assoc. Prof. Tajana Koren Ivančević, PhD, Assoc. Prof. Nikolina Stanić Loknar, PhD.	
Course title	Typography in multimedia	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	III.	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. Course objectives
<i>The aim of the course is to train students to use and program the display of typographic elements in digital media. Students will create kinetic typography using software tools and programming languages. Programming in different programming languages, for different media. Fractal forms in typography will be experimented with by creating branched fractal structures using programming codes. It will manipulate the display of text on the web using programmable fonts. Typography in videos will be introduced. Text animation and special effects in post-production. Random numbers in typography display in post-production.</i>
1.2. Enrollment conditions

1.3. Expected learning outcomes							
<i>Plan the creation of a typographic solution for digital media</i> <i>Apply appropriate tools for creating mobile typography</i> <i>Use typography in post-production</i> <i>Integrate creative solutions for displaying typography in different digital media</i>							
1.4. Course content							
1. Classification of media and use of typography. 2. Digital tools for creating and programming typography 3. Kinetic typography and tools 4. 3D typography 5. Programmable typography for display on the web 6. Animating typography 7. Fractal typography 8. Programming of typography through processing 9. Manipulation of text in videos and post-production							
1.5. Types of Teaching Methods				☒ Lectures ☐ Seminars and workshops ☒ Exercises ☒ Online education ☐ Fieldwork	☒ Independent tasks ☒ Multimedia and network ☐ Laboratory ☐ Mentorship ☐ Other e-learning 45%		
1.6. Student obligations							
<i>Mandatory attendance at lectures and completion of independent tasks according to instructions. Students complete the task independently according to the instructions for each teaching unit and submit their solutions through the e-learning system.</i> <i>Condition for taking the exam: minimum attendance at lectures 30%, 80% independent assignments</i>							
1.7. Student work monitoring							
Attendance	X	Activity in classes	X	Seminar paper		Experimental work	
Written exam		Oral exam	X	Essay		Research	
Project	X	Continuous knowledge assessment	X	Report		Practical work	X
Portfolio							
1.8. Assessment and evaluation of student work during classes and at the final exam.							
<i>Evaluation:</i> <i>As part of the project tasks, students plan to create a typographic solution for digital media</i> <i>As part of the project tasks, students apply the appropriate tools for creating mobile typography</i>							

*As part of the project assignments, students will use typography in post-production
Through project classes, students will integrate creative solutions for displaying typography in different digital media*

Assessment:

Project tasks within exercises 100%

Colloquiums 100% (if 80% of the project tasks have been completed)

Colloquium 1 33%

Colloquium 2 33%

Colloquium 3 33%

1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course

<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
Reas, C., Fry, B. (2007) Processing: a programming handbook for visual designers and artists, The MIT Press Cambridge, Massachusetts, ISBN 978-0-262-18262-1		
w3schools.com		
T. & C. Meyer: Creating motion graphics with After Effects, ISBN 978-0-240-81415-5, 2010		

1.10. Supplementary literature

1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies

Student survey, self-evaluation form, etc..

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Maja Strgar Kurečić, PhD	
Course title	Digital photography	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Compulsory</i>	
Year	<i>III.</i>	
ECTS credit and teaching method	ECTS credits	3
	Number of hours (L+E+S)	2+1+0

COURSE DESCRIPTION
1.1. Course objectives
<i>The goal of the course is to train students to properly handle digital cameras independently in different conditions of daylight and studio lighting. Through this course, students will acquire basic knowledge about the types, parts and working principle of a digital camera. By acquiring knowledge about the characteristics and settings of digital cameras and understanding the criteria and standards of technical quality of digital photography, students will be able to recognize the technical characteristics of digital cameras that affect image quality. As part of the exercises, students will learn how to properly process the photos they have taken by applying appropriate photo editing software. Through the application of acquired theoretical knowledge in practical work with a digital camera, students will be able to independently design and present a portfolio of photographic works.</i>
1.2. Enrollment conditions
<i>Attended course Fundamentals of Photography</i>
1.3. Expected learning outcomes
<i>1. Explain the basic types, parts and principles of operation of a digital camera and lens.</i> <i>2. Recognize the technical characteristics of digital cameras that affect image quality.</i> <i>3. Apply different models of digital cameras in different conditions of daylight and studio lighting depending on the task and the needs of the reproduction medium.</i> <i>4. Apply appropriate photo editing software.</i> <i>5. Present a selected topic from the field of digital photography as a team.</i> <i>6. Create a portfolio of photographic works independently.</i>
1.4. Course content
<i>1. Introductory lecture. Getting to know the content of the course. Outline content of lectures and exercises. Method of scoring and evaluation. Description of mandatory activities. Announcement of an invited lecture.</i> <i>2. Development of digital photography throughout history. Technical and technological achievements that enabled the development of digital photography. The first models. Trends in the photographic equipment market. Overview of the latest camera models.</i> <i>3. Parts of a digital camera. Basic categories of digital cameras and their applicability in certain reproduction media. Basic parts of a digital camera. Types and principle of operation of sensors. Memory cards.</i> <i>4. Digital camera settings. Overview of the most important settings for recording. Selecting the image size and recording format, adjusting the white balance, adjusting the ISO sensitivity, optimizing the image, adjusting the focus mode, adjusting the trigger mode, exposure control (selecting the metering mode, recording mode, exposure compensation).</i> <i>5. Lenses. Lens construction. Screen aperture and depth of field. Focal length of the lens and angle of view. The influence of the sensor format on the change in focal length. Crop factor. Equivalent focal length. Division of lenses - types of lenses.</i> <i>6. Lighting. Light sources and basics of photometry. Luminous flux, intensity of light source, intensity of illumination. Light color temperature. Units of measurement. Basic types of studio lighting. Lighting regulation systems. Electronic flash. Creative use of artificial light. Light painting.</i> <i>7. Record formats of image files. Vector formats. Raster formats. Advantages and disadvantages of Raw format, Raw converters. Types of compression. The effect of compression on image quality. Dependence of file size on image content. Applicability of certain recording formats for certain playback media.</i>

8. Characteristics of the sensor that affect the quality of the photo. Sensor format. Sensitivity. Dynamic range. Noise. HDR photography.

9. Photo processing depending on the reproduction mode. Differences and specifics in processing photos for the web and processing for print. Basics of Color Management. ICC profiles. Color spaces sRGB and Adobe RGB. Characterization of the digital camera. Monitor calibration.

1.5. Types of Teaching Methods

- ☒ Lectures
- ☐ Seminars and workshops
- ☒ Exercises
- ☒ Online education
- ☐ Fieldwork

- ☒ Independent tasks
- ☐ Multimedia and network
- ☐ Laboratory
- ☐ Mentorship
- ☐ Other

1.6. Student obligations

Mandatory attendance at lectures and exercises. Creation and presentation of a seminar paper that deals with one of the offered topics related to the content of the course - group work. Writing two colloquia - one in the middle of the semester and one at the end. Creating a folder with works - portfolio (artistic approach to the chosen topic) - independent work.

1.7. Student work monitoring

Attendance	x	Activity in classes		Seminar paper	x	Experimental work	
Written exam	x	Oral exam		Essay		Research	
Project		Continuous knowledge assessment	x	Report		Practical work	x
Portfolio	x						

1.8. Assessment and evaluation of student work during classes and at the final exam.

Assessment:

The final grade from the College is formed from the points collected from:

- seminar work (max. 20 points)
- folders with works - portfolio (max. 34 points)
- colloquium 1 (max. 20 points)
- colloquium 2 (max. 20 points)
- class attendance (max. 6 points).

Evaluation:

1. In writing, students explain the basic types, parts and principle of operation of a digital camera and lens
2. In writing and as part of exercises, students explain the technical characteristics of digital cameras that affect image quality
3. As part of the exercises, students independently apply different models of digital cameras in different conditions of daytime and studio lighting, depending on the task and the needs of the reproduction medium.
4. As part of the exercises, students apply appropriate software for photo editing
5. As part of the seminar work, students present a selected topic from the field of digital photography as a team

6. In the framework of practical work, students independently create a portfolio of photographic works		
1.9. Mandatory literature and number of copies available in relation to the number of students currently attending the course		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
Strgar Kurečić, Maja, "Osnove digitalne fotografije", Školska knjiga, Grafički fakultet Sveučilišta u Zagrebu, Zagreb 2017. (Sveučilišni udžbenik), ISBN 978-953-0-30729-2	4	
1.10. <i>Supplementary literature</i> Freeman, Michael; The photographers eye: a graphic guide: instantly understand composition & design for better photography, London: Ilex Press, 2019. McHugh, Sean T.; Understanding photography: master your digital camera and capture that perfect photo, San Francisco: No Starch Press, 2019.		
1.11. Methods for monitoring the quality of acquired knowledge, skills, and competencies		
Student survey, self-evaluation form		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Ivana Žiljak Stanimirović, PhD	
Course title	Typography	
Study programme	Undergraduate university study programme Multimedia and Visual Communications	
Course status	Compulsory	
Year	II.	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>
The aim of this course is to acquaint the students with the historical, theoretical and practical aspects of typography, with an emphasis on the application of typography in design and visual communications, digital media, and printing press. Students will acquire knowledge about the classification of typography regarding to historical development and optical characteristics, learn how to select and apply appropriate typography in design to improve readability, aesthetics and functionality of multimedia and printed products. By mastering the course, the student will be able to apply the knowledge of solving the tasks of standardizing

typefaces for use on different platforms, adding diacritical characters for the Croatian language, designing and realizing the author's individualized typeface, and fonts and pictograms for use in signage.		
1.2. <i>Enrollment conditions</i>		
1.3. <i>Expected learning outcomes</i>		
1. Describe the development of typography through the classification of letters, recognize the partition into different letter categories and explain the terms and rules in typography and typographic measurement systems. 2. Analyze the anatomy of typography, identify parts of typefaces such as serif, x-height, baseline, spacing, typeface size, styles, typographic rules in design, multimedia and print. 3. Apply knowledge of the anatomy of typography through font redesign and editing of characteristic diacritical characters for the Croatian language within the selected typeface, as well as characters for international use, interpret advantages and disadvantages and optimize typographic solutions. 4. Use knowledge about planning, design and realization of individualized vector typographic solutions through the design of an author's designer or handwritten font in specialized programs and generate the font for use on different platforms. 5. Design specialized typographic characters, Pi fonts, pictograms and symbols for use in signaling and multimedia. 6. Categorize typography through personal analysis of digital fonts and summarizing knowledge about typographic standards in visual communications, design, print and multimedia.		
1.4. <i>Course content</i>		
1. Historical development of typography, development of typographic styles and their application throughout history. 2. Theory and terms in typography, typography in use, typographic principles and rules in typography. 3. Basics of character design, spacing between letters, lines and text in the graphic design. 4. Anatomy of typography, detailed study of the parts of letter characters and their function, definition of the rectangle - square position and letter lines. 5. <i>Bezier's</i> curve and vector graphics as the basis of letter character outline. 6. Introduction to the software package for creating a font, instructions for creating an individualized digital font through practical project tasks. 7. Analysis and creation of characteristic diacritical characters for the Croatian language within the selected script, as well as characters for international use. 8. Designing and creating a handwritten template for original individualized typography in the form of a handwritten or individualised design font. 9. Transformation of letter characters into digital form and template processing in graphics programs for image and text processing. 10. Creation of typographic solutions within the font creation program, alignment of thickness values, spacing, testing, generating and exporting font. 11. Presentation and application of font in graphic design. 12. Design and design <i>Pi</i> fonts, pictograms and symbols for use in signaling and multimedia. 13. New modern classification of typography, individualized selection, database creation through classification and font family. 14. Standardization in modern formats such as <i>TrueType</i>, <i>OpenType</i>, <i>ClearType</i> and variable fonts. 15. Design and use of typography on different platforms for application in design and visual communications, digital media, and printing press.		
1.5. <i>Types of Teaching Methods (</i>	x Lectures x Seminars and workshops x Exercises	x Independent tasks x Multimedia and network ☐ Laboratory

				☒ Online education ☐ Fieldwork	☒ Mentorship ☐ Other_		
1.6. <i>Student obligations</i>							
Attending classes and regularly attending lectures, exercises and seminars. Practical work on exercises, presentation of project tasks. Independent preparation of seminar papers and presentations. Continuous monitoring of classes and application of theoretical knowledge through the implementation of project tasks. Students complete the exercise every week independently with a regular check of each student's final solutions, which is recorded through the e-learning system. Requirements for being introduced to the exam: minimum attendance at 70% of classes, completed exercises, seminar and presentation.							
1.7. <i>Student work monitoring</i>							
Attendance	x	Activity in classes	x	Seminar paper	x	Experimental work	x
Written exam	x	Oral exam	x	Essay		Research	
Project	x	Continuous knowledge assessment	x	Report		Practical work	x
Portfolio							
1.8. <i>Assessment and evaluation of student work during classes and at the final exam.</i>							
Evaluation: Project tasks within exercises and presentation of project tasks: 30% Project assignment within the seminar, seminar paper and presentation: 30% Theoretical part of the material in the framework of continuous knowledge assessment: 30% Attendance and activity in class: 10% Evaluation: 1. In written or oral form, describe the development of typography through the classification of letters, recognize the partition into different type categories, and explain concepts and rules in typography and typographic measurement systems. 2. In written or oral form, students should analyze the anatomy of typography, identify parts of typefaces such as serifs, x-height, baseline, spacing, font size, styles, typographic rules in design, multimedia and print. 3. As part of the project assignment in the exercises, students should apply their knowledge of the anatomy of typography through the redesign of the font and edit the characteristic diacritical characters for the Croatian language within the selected script, as well as characters for international use, interpret the advantages and disadvantages and optimize typographic solutions. 4. As part of the exercises and the project assignment, students use their knowledge of planning, design and realization of individualized vector typographic solutions through the design of an author's designer or handwritten font in specialized programs and should generate the font for use on different platforms. 5. In the framework of the exercises and the project assignment, students design specialized typographic characters, Pi fonts, pictograms and symbols for use in signaling and multimedia.							

6. As part of the seminar, students categorize typography through personal analysis of digital fonts and summarizing knowledge about typographic standards in visual communications, design, refraction, print and multimedia.		
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
Franjo Mesaroš: „ <i>Tipografski Priručnik</i> “, Grafički obrazovni centar, Zagreb, 1985.	14	
Roberts, Raymond: „ <i>Typographic Design / Raymond Roberts</i> “, London: Ernest Benn Limited, cop. 1966.	1	
Lupton, Ellen: „ <i>Thinking with type: a critical guide for designers, writers, editors, & students / Ellen Lupton</i> “, New York: Princeton Architectural Press, cop. 2010., ISBN 9781568989693	3	
Williams, Jim: „ <i>Type matters! / Jim Williams</i> “, London: Merrell, 2012., ISBN 9781858945675	2	
1.10. <i>Supplementary literature</i> https://www.monotypefonts.com/		
1.11. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
Student survey, self-evaluation form.		

COURSE DESCRIPTION

GENERAL INFORMATION		
Course leader	Prof. Ivana Žiljak Stanimirović, PhD	
Course title	Packaging design	
Study programme	<i>Undergraduate university study programme Multimedia and Visual Communications</i>	
Course status	<i>Elective</i>	
Year	<i>II.</i>	
ECTS credit and teaching method	ECTS credits	4
	Number of hours (L+E+S)	2+2+0

COURSE DESCRIPTION
1.1. <i>Course objectives</i>

The aim of the course is to train students for the design process in the development of packaging design. Students will acquire knowledge and competences in packaging design planning according to the given steps, from setting the project task, analysis, design, development of the solution to visualization of the prototype and finally presentation. By mastering the course, students will gain knowledge of how to design packaging as an independent product and they will use communication tools. Through this course, students will acquire knowledge and competences about conceptual thinking, *branding*, aesthetics and functionality of design and products, as well as practical skills in prototype design and working with relevant software tools for designing and visualizing packaging design. The goal is to provide knowledge and competence through an iterative design process in creating a recognizable visual identity of packaging which sets the product apart from the competition, to include an interdisciplinary approach to related courses necessary for the sustainable development of packaging, and to courses which include implementation solutions for printing and packaging realization.

1.2. Enrollment conditions

1.3. Expected learning outcomes

1. Describe the basics of packaging design and methodological approaches in the development of packaging design.
2. Analyze the selected product, compare competing products and adapt the design to the target group.
3. Distinguish the elements of graphic design, aesthetic and functional aspects through the selection of shape, typography, color, vector and raster graphics in the process of designing and preparing packaging.
4. Apply knowledge through designing packaging design from sketch to prototype creation, form elements of visual identity and graphic standards.
5. Demonstrate practical skills in making and visualizing prototypes, improve work with relevant software for design and prepress of packaging.
6. Present the project from research, analysis and concept to the design and visualization of the prototype and evaluate the design solutions.

1.4. Course content

1. Introduction to packaging design and basics of packaging design.
2. Getting to know the design process through the selection and definition of the project task.
3. Analysis of the selected product, a competitive product analysis, examination of the market and target groups.
4. Setting up a creative concept, designing packaging design from conceptual solutions and sketches to prototype development through a design model and an iterative process.
5. Positioning of elements of visual identity and recognizability of the packaging, *branding*, logo design, defining colors, shapes, primary and secondary typography, determining the hierarchy of information on packaging.
6. Vector and pixel graphics on packaging.
7. Coding, legal requirements and mandatory informations on packaging, intelligent packaging and recognition of security graphics on packaging.
8. Planning the use of packaging and functional packaging solutions.
9. Adaptation of the design to the target group.
10. Prototyping, design and visualization of the design solution.
11. Design and evaluation of packaging through an interdisciplinary and iterative approach with the possibility of connecting with related courses such as integration of practices for sustainable packaging development, packaging production processes, printing and material technology and 3D visualization.

12. The final presentation of the project from the concept and design of the packaging to the visualization of the prototype, presentation of the basic graphic standards and visual identity of the packaging and evaluation.

1.5. Types of Teaching Methods

- x Lectures
- ☐ Seminars and workshops
- x Exercises
- x Online education
- ☐ Fieldwork

x Independent tasks

☐ Multimedia and network

☐ Laboratory

X Mentorship

☐ Other_

1.6. *Student obligations*

Attending classes and regularly attending lectures and exercises.

Practical work on exercises, presentation of project tasks.

Continuous monitoring of classes and application of knowledge through the realization of a project assignment.

Students complete the exercise every week independently with a check of each student's final solutions, which is recorded through the e-learning system.

Requirements for being introduced to the exam: minimum attendance at 70% of the class, completed exercises and presentation of the project assignment.

1.7. Student work monitoring

Attendance	x	Activity in classes	x	Seminar paper		Experimental work	x
Written exam		Oral exam	x	Essay		Research	
Project	x	Continuous knowledge assessment	x	Report		Practical work	x
Portfolio							

1.8. Assessment and evaluation of student work during classes and at the final exam.

Grading:

Exercises: 20%

Presentation of the Project Assignment of packaging design: 40%

Continuous Knowledge Assessment: 30%

Class attendance: 10%

Evaluation:

1. In written or oral form, describe the basics of packaging design and methodological approaches in the development of packaging design.
2. In written or oral form, analyze the selected product, compare competing products and adapt the design to the target group.
3. As part of the project assignment, in the exercises, distinguish elements of graphic design, aesthetic and functional aspects through the selection of shape, typography, color, vector and raster graphics in the process of designing and preparing packaging.

4. As part of the project assignment, apply knowledge through the design of packaging design from sketch to prototype creation, form elements of visual identity and graphic standards. 5. Within the scope of the project assignment, demonstrate practical skills in creating and visualizing prototypes, improve work with relevant software for design and prepress of packaging. 6. Within the scope of the project assignment, present the project from research, analysis and concept, to the design and visualization of the prototype and evaluate the design solutions.		
1.9. <i>Mandatory literature and number of copies available in relation to the number of students currently attending the course</i>		
<i>Title</i>	<i>Number of copies</i>	<i>Number of students</i>
M. Tomiša, M. Milković: <i>"Graphic design and communication"</i> , University of Varaždin, Varaždin, 2013, ISBN 9789537809195	2	
M. Rosner Klimchuk, S. A. Krasovec: <i>„Packaging Design - Successful Product Branding From Concept to Shelf“</i> , Johan Wiley & Sons, 2nd edition, New Jersey, 2012., ISBN 9781118027066	4	
1.10. <i>Supplementary literature</i> https://www.bboxpackingsolution.com/free-die-cut-design-for-paper-packagings.pdf		
1.11. <i>Methods for monitoring the quality of acquired knowledge, skills, and competencies</i>		
Student survey, self-evaluation form.		

In Zagreb, 10th March 2025.

(signature of the head of the Higher Education Institution and seal or electronic signature)