

## DESCRIPTION OF THE COURSE OF STUDY

<b>Course code</b>	<b>0719-2ID-C30-TWD</b>	
<b>Name of the course in</b>	Polish	<b>Techniki wizualizacji danych</b>
	English	<b>Data visualization techniques</b>

### 1. LOCATION OF THE COURSE OF STUDY WITHIN THE SYSTEM OF STUDIES

<b>1.1. Field of study</b>	Data engineering
<b>1.2. Mode of study</b>	Full-time
<b>1.3. Level of study</b>	Undergraduate engineering study
<b>1.4. Profile of study</b>	General academic
<b>1.5. Person/s preparing the course description</b>	dr hab. Dariusz Banaś prof. UJK
<b>1.6. Contact</b>	<a href="mailto:d.banas@ujk.edu.pl">d.banas@ujk.edu.pl</a>

### 2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

<b>2.1. Language of instruction</b>	English
<b>2.2. Prerequisites</b>	Programming fundamentals, Computer Networks, Databases

### 3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

<b>3.1. Form of classes</b>	lectures, laboratories	
<b>3.2. Place of classes</b>	Courses in the UJK teaching rooms of the Faculty of Exact and Natural Science	
<b>3.3. Form of assessment</b>	credit with grade (lectures, laboratories)	
<b>3.4. Teaching methods</b>	Information lecture, Laboratory method (experiment)	
<b>3.5. Bibliography</b>	<b>Required reading</b>	1. Scott Murray, Interactive Data Visualization for the Web, O'Reilly Media
	<b>Further reading</b>	<ol style="list-style-type: none"> <li>1. Tom Negrino, Dori Smith, JavaScript: Visual QuickStart Guide, Peachpit Press</li> <li>2. Kyran Dale, Data Visualization with Python and JavaScript, O'Reilly Media</li> <li>3. <a href="http://www.w3schools.com">http://www.w3schools.com</a></li> </ol>

### 4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED LEARNING OUTCOMES

<b>4.1. Course objectives (including form of classes)</b>
<p>C1 - Acquainting with the basic technologies allowing for the publication of data on the World Wide Web</p> <p>C2 - Understanding advanced technologies used for programming interactive applications for data visualization</p> <p>C3 - Acquiring the skill of practical application of learned technologies for interactive visualization of data on the World Wide Web</p>

#### 4.2. Detailed syllabus (including form of classes)

##### Lectures and laboratories:

Introduction to issues related to graphical presentation of data on the World Wide Web  
 Introduction to the D3 library  
 Basics of the technologies used (HTML, DOM, CSS, Javascript, SVG)  
 Preparation of the work environment (WAMP server, a terminal with a Python interpreter, references to the D3 library)  
 Data preparation (creating markup, data binding)  
 Graphic data presentation (drawing with div tags, drawing with SVG markers, preparing various types of charts)  
 Updates, transitions and traffic (order scales, event listening functions, updating scaling functions, combining data with keys)  
 Interactivity (linking event listening functions, grouping of SVG tags, hints)  
 Chart systems (including circular, cumulative, force)  
 Geographical maps (GeoJSON, paths, projections, cartogram)  
 Exporting (bitmaps, PDF files, SVG files)

#### 4.3. Education outcomes in the discipline

Code	A student, who passed the course	Relation to learning Outcomes
within the scope of <b>KNOWLEDGE:</b>		
W01	knows the basic technologies that allow the presentation of data on the World Wide Web	ID1A_W06 ID1A_W07 ID1A_W08
W02	describes the purpose and knows the basic set of D3 library commands	ID1A_W06 ID1A_W07 ID1A_W08
W03	explains the basic concepts related to data preparation and visualization design	ID1A_W06 ID1A_W07 ID1A_W08
W04	explains the basic concepts and describes techniques for performing interactive data visualization	ID1A_W06 ID1A_W07 ID1A_W08
within the scope of <b>ABILITIES:</b>		
U01	can prepare the working environment with the D3 library	ID1A_U05 ID1A_U06
U02	can apply learned technologies to interactive data visualization	ID1A_U05 ID1A_U06
within the scope of <b>SOCIAL COMPETENCE:</b>		
K01	is aware of the need to protect intellectual property	ID1A_K02

#### 4.4. Methods of assessment of the intended learning outcomes

Teaching outcomes (code)	Method of assessment (+/-)																				
	Oral answer			Test			Self-study			Group work											
	Form of classes			Form of classes			Form of classes			Form of classes			Form of classes			Form of classes			Form of classes		
	L	C	P	L	C	P	L	C	P	L	C	P	L	C	P	L	C	P	L	C	P
W01	+				+																
W02	+				+																
W03	+				+																
W04	+				+																
U01					+						+										
U02					+						+										
K01	+										+										

4.5. Criteria of assessment of the intended learning outcomes		
Form of classes	Grade	Criterion of assessment
lecture (L)	3	at least 50% and not more than 60% of the total number of available points
	3,5	more than 60% and not more than 70% of the total number of available points
	4	more than 70% and not more than 80% of the total number of available points
	4,5	more than 80% and not more than 90% of the total number of available points
	5	more than 90% of the total number of available points
classes (C)	3	at least 50% and not more than 60% of the total number of available points
	3,5	more than 60% and not more than 70% of the total number of available points
	4	more than 70% and not more than 80% of the total number of available points
	4,5	more than 80% and not more than 90% of the total number of available points
	5	more than 90% of the total number of available points
project (P)	3	at least 50% and not more than 60% of the total number of available points
	3,5	more than 60% and not more than 70% of the total number of available points
	4	more than 70% and not more than 80% of the total number of available points
	4,5	more than 80% and not more than 90% of the total number of available points
	5	more than 90% of the total number of available points

#### 5. BALANCE OF ECTS CREDITS – STUDENT’S WORK INPUT

Category	Student's workload	
	Full-time studies	Extramural studies
<i>NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER /CONTACT HOURS/</i>		
<i>Participation in lectures</i>	30	
<i>Participation in laboratories/project</i>	30	
<i>Preparation for the exam</i>	1	
<i>Others</i>		
<i>INDEPENDENT WORK OF THE STUDENT/NON-CONTACT HOURS/</i>		
<i>Preparation for the lecture</i>	10	
<i>Preparation for the laboratories</i>	15	
<i>Preparation for the exam</i>	14	
<i>Gathering materials for the project</i>	10	
<i>Preparation of multimedia presentation</i>		
<i>Others*</i>		
<b>TOTAL NUMBER OF HOURS</b>	<b>110</b>	
ECTS credits for the course of study	<b>5</b>	

*Accepted for execution* (date and signatures of the teachers running the course in the given academic year)

.....