Study programmes: Master studies - Informatics	
Course name: R356 - Digital Image Processing	
Lecturers: Saša Malkov and other lecturers at Department of computer Science	
Status: Optional	
ECTS: 8	
Attendance prerequisites: -	

Course aims: Introduction to the basics of digital image processing: presentation of digital images, preprocessing, morphological operations, image analysis and the applications of digital image processing.

Course outcome: After completion of the course, the student has the knowledge of the acquisition, processing and applications of digital images processing and understands the levels and purposes of individual techniques in processing digital images for different purposes.

Course content:
 - Image acquisition, hardware, file formats
 - Elements of visual perception
 - Transformations in the spatial domain: Gamma correction, histogram equivalization, thresholding, softening, sharpening.
 - Edge detection, gradient operators, Laplassian operator
 - Basics of representation in the frequency domain, Fourier and cosine transformations
 - Frequency domain filters
 - Color models: RGB, CMY, HSI
 - Compression of digital images, JPEG algorithm, quantization matrices

Literature:
Rafael Gonzales and Richard Woods: Digital Image Processing, Third Edition, Pearson - Prentice Hall.
(The lecturer can choose another relevant current literature)

Number of hours: 7	**Lectures: 2**	**Tutorials: 3**	**Laboratory: -**	**Research: 2**

Teaching and learning methods: Frontal lectures, group and individual tutorials and exercises.

Assessment (maximal 100 points)				
Course assignments	**points**	**Final exam**	**points**	
Lectures	5	Written exam	-	
Exercises / Tutorials	-	Oral exam	-	
Colloquia	35	Written-oral exam	60	
Essay / Project	-			