

<b>Study programmes:</b> PhD studies - Informatics				
<b>Course name:</b> R431 - Digital Image Processing - Advanced topics				
<b>Lecturers:</b> Saša Malkov and other lecturers at Department of computer Science				
<b>Status:</b> Optional				
<b>ECTS:</b> 9				
<b>Attendance prerequisites:</b> -				
<b>Course aims:</b> Preparing students for the application and development of advanced image processing techniques.				
<b>Course outcome:</b> Upon completion of the course, the student has deeper knowledge of advanced image processing techniques.				
<b>Course content:</b>				
<ul style="list-style-type: none"> <li>- Acquisition of images, hardware, file formats</li> <li>- Basic filters, Thresholding techniques</li> <li>- Restoration and reconstruction of digital images, removal of noise, reconstruction from projections</li> <li>- Edge detection, Binary analysis of shapes</li> <li>- Morphological processing, erosion, dilation, opening, closing</li> <li>- Detection of lines and circles, Hough transformation</li> <li>- Segmentation of digital images and applications</li> <li>- Textures, Skeletonization</li> <li>- Waves and multiresolutional processing</li> <li>- Optical recognition of characters and shapes</li> <li>- Evolutionary algorithms and image processing</li> </ul>				
<b>Literature:</b>				
Rafael Gonzales and Richard Woods: Digital Image Processing, Third Edition, Pearson - Prentice Hall. (The lecturer can choose another relevant current literature)				
<b>Number of hours:</b> 10	<b>Lectures:</b> 4	<b>Tutorials:</b> -	<b>Laboratory:</b> -	<b>Research:</b> 6
<b>Teaching and learning methods:</b> Frontal lectures, group and individual tutorials and exercises.				
<b>Assessment (maximal 100 points)</b>				
<b>Course assignments</b>	<b>points</b>	<b>Final exam</b>		<b>points</b>
Lectures	-	Written exam		-
Exercises / Tutorials	-	Oral exam		-
Colloquia	-	Written-oral exam		40
Essay / Project	60			