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| The title of the course | **Image Processing** |
| Faculty | [Faculty of Mechanical Engineering and Computer Science](http://eng.ath.bielsko.pl/index.php/faculties/gerg) |
| The level of studies | Engineer (BSc) |
| Semester | Winter |
| The form of classes and number of hours | Laboratories 15h |
| Classes conducted for Polish students. Erasmus students can join them | Yes |
| Language of instruction | Polish + additional contact hours in English |
| The number of ECTS | 1 |
| Teacher | Joanna Gancarczyk, PhD |
| The aims of the course | The main purpose of the course is to give the students an introduction to the methods of digital image processing and their application. |
| The content of the course: main topics and key ideas | 1. Digital image representation. RGB and L\*a\*b\* color spaces  2. Introduction to MATLAB programming and MATLAB Image Processing Toolbox  3. Histogram equalization  4. Point based operations: contrast enhancement, thresholding,  5. Neighbourhood operations: denoising, image gradient, edge detection  6. Morphological operations: dilatation, erosion, opening, closing  7. Segmentation methods, watershed algorithm  8. Case study and applications |
| Didactics methods | Presentation, case study, group and individual work |
| Course requirements | Exam/presentation/attendance |
| Literature (basic and supplementary) | 1. R.Gonzalez and R.Woods: Digital Image Processing, 2nd Edition. Prentice Hall, 2002.  2. R.Gonzalez, R.Woods and S.Eddins: Digital Image Processing using Matlab. Prentice Hall, 2004.  3. J.C.Russ: The Image Processing Handbook. CRC Press, 2007.  4. A.Bovik: Handbook Of Image And Video Processing. Academic Press 2005. |
| The effects of the education   * knowledge * skills * social competences | Knowledge – basics of image processing methods and their application  Skills – understanding the image processing methods, ability of choosing a method to the task  Social competences –student is able to work in a group in order to describe the issues, the choice of the solution and analysis of the results |