Basic information about the subject ( independent of the cycle)

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| **Module name** | **GIS INTEROPERABILITY** |
| Erasmus code |  |
| ISCED code |  |
| Language of instruction | English |
| Website | - |
| Prerequisites | Basic knowledge of MS Excel, Corel DRAW, Google SketchUP and ArcGIS (at least two of mentioned) |
| ECTS points hour equivalents | **Contact hours (work with an academic teacher)** **15****Total number of hours with an academic teacher 15****Number of ECTS points with an academic teacher** 1 **Non-contact hours (students' own work) 15****Total number of non-contact hours 15****Number of ECTS points for non-contact hours 1****Total number of ECTS points for the module 2** |
| Educational outcomes verification methods | Progress during classes in computer lab., final project |
| Description | The module covers the knowledge in the area of **GIS, cartography, statistics**Advanced interoperability functions make GIS a place of integration of spatial data obtained from a variety of specialized programs. Knowing how to exchange data with other programs (e.g. mathematical analysis, computer graphics or three-dimensional modelers) can increase the efficiency of analysis and visualization of spatial information and increase the visual quality of the research results. The aim of the course is to develop skills of expanding the functionality of ArcGIS with possibilities of MS Excel, CorelDRAW and Google SketchUP. |
| Reading list | Online tool helps for: MS Excel, Corel DRAW, Google SketchUP and ArcGISKuna J., 2015: Proste animacje 4D w GIS (Simple 4D animations in GIS), [Acta Universitatis Lodziensis](http://foliags-o.geo.uni.lodz.pl/zesz22.php)[Folia Geographica Socio-Oeconomica no 22/2015, p 173-181.](http://foliags-o.geo.uni.lodz.pl/zesz22.php) |
| Educational outcomes | **KNOWLEDGE****Basic knowledge graphic semiotics, 2D and 3D computer graphics, types and characteristics of spatial data.****SKILLS****Practical skills of MS Excel, Corel DRAW, Google SketchUP and ArcGIS.****ATTITUDES****Creating individual projects with interdisciplinary approach to multiple fundamental programmes used in statistics, computer graphics and GIS.** |
| Practice | Creating simple 3D animation of particular site. |

Information about classes in the cycle

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| Website | - |
| Educational outcomes verification methods | Progress during classes, final project |
| Comments | Classes are finished with a final project that would summarize obtaining particular knowledge and practical skills of interoperability with multiple software |
| Reading list | Online tool helps for: MS Excel, Corel DRAW, Google SketchUP and ArcGISKuna J., 2015: Proste animacje 4D w GIS (Simple 4D animations in GIS), [Acta Universitatis Lodziensis](http://foliags-o.geo.uni.lodz.pl/zesz22.php)[Folia Geographica Socio-Oeconomica no 22/2015, p 173-181.](http://foliags-o.geo.uni.lodz.pl/zesz22.php) |
| Educational outcomes | **KNOWLEDGE****Basic knowledge graphic semiotics, 2D and 3D computer graphics, types and characteristics of spatial data.****SKILLS****Practical skills of MS Excel, Corel DRAW, Google SketchUP and ArcGIS.****ATTITUDES****Creating individual projects with interdisciplinary approach to multiple fundamental programmes used in statistics, computer graphics and GIS.** |
| A list of topics | 1. Introduction to GIS and philosophy of interoperability.
2. Excel - why it is easier to use it instead of database calculations in ArcGIS.
3. Excel - how to exchange data with ArcGIS.
4. ArcGIS - creating simple 2D visualizations, layouts.
5. ArcGIS - why visualization is not yet a map: difference between topologic and cartographic module of spatial data.
6. Corel DRAW - why should we correct our visualizations manually, toolset and tooltips.
7. Corel DRAW - how to exchange data with ArcGIS.
8. SketchUP - the idea of 3D graphics, toolset and tooltips.
9. SketchUP - creating simple 3D models.
10. ArcScene - creating 3D terrain surface, difference between TIN and GRID model, what is extrusion.
11. ArcScene - library of 3D symbols, placement properties.
12. ArcScene and SketchUP interoperability - creating own 3D symbology.
13. ArcScene - modelling 3D spatial arrangement of own final project.
14. ArcScene - correcting visual errors in final project.
15. Creating fly-through animation of final project site.
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| Teaching methods | Computer laboratory, project methods |
| Assessment methods | Individual assessment of the complexity and completeness of the final project |