<table>
<thead>
<tr>
<th>Subject name</th>
<th>Improved 2D Drawing in AutoCAD and Introduction to 3d Civil Projects</th>
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</thead>
<tbody>
<tr>
<td>Subject code</td>
<td>IS-CAD-13</td>
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<tr>
<td>Department</td>
<td>Hydraulic Engineering and Geotechnics</td>
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<tr>
<td>Faculty</td>
<td>Environmental Engineering and Land Surveying</td>
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<tr>
<td>Subject supervisor/Lecturer</td>
<td>Andrzej Strużyński Ph.D., Maciej Wyrębek Ph.D.</td>
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### General information

<table>
<thead>
<tr>
<th>Teaching period</th>
<th>winter or semester semester</th>
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<tbody>
<tr>
<td>ECTS credit</td>
<td>6</td>
</tr>
<tr>
<td>Lectures total</td>
<td>0</td>
</tr>
<tr>
<td>Lab practicals</td>
<td>45</td>
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</tbody>
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### Objective and general description

The main objective of the course is to adopt techniques of 2D drawing in AutoCAD, 3D modelling and printing. Next step is basics of work with GIS data.

### Lectures 0 hours

- 1. Raster and vector drawings. Menus and commands in AutoCAD. Drawing and text area.
- **Drawing commands (with example drawings):**
  - 2. line, zoom, pan, view
  - 3. drawing units, drawing methods
  - 4. pline, pedit
  - 5. stepping, snapping, polar tracking
  - 6. polygon, rectangle, construction line, ray
  - 7. circle, arc, donut, spline, ellipse
  - 8. multiline, mlstyle, mledit, point, ddptype
  - 9. inquiry (measure, distance, area)
  - 10. layers, linetype, ltscale
  - 11. text, text editing
  - 12. blocks, attributes, writing blocks, dimensioning, hatching

### Lab practicals 15 x 3 hours

- **Editing commands (with example drawings):**
  - 13. move (with select), erase, explode
  - 14. copy, quick editing, stretch
  - 15. trim, extend, break, offset, fillet, chamfer
  - 16. scale, mirror, rotate, array

- **Advanced commands:**
  - 17. limits, ucs, ucsicon, vports
  - 18. model area, paper area
  - 19. printing in scale

- **3D drawing**
  - 20. vpoint, elev, 3dorbit, plan
  - 21. 3d surfaces, shade, shademode
  - 22. region, union, subtract, extrude, box, cylinder
  - 23. Civil GIS modelling, surfaces, cross-sections

### References

- manuals for AutoCAD (AutoDesk)