### Field of study
Computer Science

### Degree level and programme type
Engineer's degree full-time programme

### Course name
Data Visualization and Communication

### Course code
FCS-00092

### Course type
obligatory

<table>
<thead>
<tr>
<th>Forms and number of hours of tuition</th>
<th>L</th>
<th>C</th>
<th>LC</th>
<th>P</th>
<th>SW</th>
<th>FW</th>
<th>S</th>
<th>Semester</th>
<th>No. of ECTS credits</th>
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<tbody>
<tr>
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<td>30</td>
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<td></td>
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<td>3</td>
<td>6</td>
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</tbody>
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### Entry requirements
Linear Algebra (FCS-00030), Calculus (FCS-00002), Discrete Mathematics (FCS-00054), Mathematical Statistics (FCS-00065).

### Course objectives
To familiarise student with basic techniques of data visualisation.

### Course content
**Lecture:**
1. Basic concepts of data visualisation
2. Design and colours
3. CSV format for data exchange
4. Basic tools and techniques to create charts
5. Multidimensional Data
6. Trees, and Hierarchies
7. Networks and geographic data
8. Heat map representation
9. More advanced techniques and modern data representations

**Classes**
1. Implement CSV parser and storage
2. Present data as table, allow user to edit values and export data.
3. Implement line chart
4. Implement pie chart
5. Implement heat map
6. Final project

### Teaching methods
brainstorming, programming, subject exercises, simulation,

### Assessment method
Projects

### Symbol of learning outcome
LO1: is familiar with the basic concepts of data visualisation and subsystem building

### Reference to the learning outcomes for the field of study
- K_W05
- K_W10
- K_U05
- K_U10

### Methods of assessing the learning outcomes
- **LO1**: Written exam

### Type of tuition during which the outcome is assessed
- **LO1**: L

### Student workload (in hours)

<table>
<thead>
<tr>
<th>Calculation</th>
<th>No. of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Attendance at lectures</td>
<td>30</td>
</tr>
<tr>
<td>2 - Attendance at laboratories</td>
<td>30</td>
</tr>
<tr>
<td>3 - Preparation for laboratories</td>
<td>10</td>
</tr>
<tr>
<td>4 - Homeworks</td>
<td>30</td>
</tr>
<tr>
<td>5 - Participation in student-teacher sessions</td>
<td>10</td>
</tr>
<tr>
<td>6 - Preparation of reports</td>
<td>25</td>
</tr>
<tr>
<td>7 - Preparation for the exam</td>
<td>15</td>
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</table>

### TOTAL: 150

### Quantitative indicators

<table>
<thead>
<tr>
<th>Student workload - activities that require direct teacher participation</th>
<th>HOURS</th>
<th>No. of ECTS credits</th>
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</thead>
<tbody>
<tr>
<td>70</td>
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<td>2.8</td>
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<tr>
<td>(11+2x15)</td>
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<table>
<thead>
<tr>
<th>Student workload - practical activities</th>
<th>HOURS</th>
<th>No. of ECTS credits</th>
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<tr>
<td>95</td>
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<td>3.8</td>
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<td>(2x17+4x1+8)</td>
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### Basic references

### Supplementary references

### Organisational unit conducting the course
Department of Digital Media and Computer Graphics

### Date of issuing the programme
Feb. 11, 2022

### Author of the programme
dr inż. Marcin Sikoczyłas