

# SYLLABUS

## 1. Data about the program of study

|     |                                |   |
|-----|--------------------------------|---|
| 1.1 | Institution                    | The Technical University of Cluj-Napoca |
| 1.2 | Faculty                        | Faculty of Civil Engineering            |
| 1.3 | Department                     | Railways, Roads and Bridges             |
| 1.4 | Field of study                 | Civil Engineering                       |
| 1.5 | Cycle of study                 | Bachelor of Science                     |
| 1.6 | Program of study/Qualification | C.I.A.C. (in English) / engineer        |
| 1.7 | Form of education              | Full time                               |
| 1.8 | Subject code                   | 14.00                                   |

## 2. Data about the subject

|     |                                |   |     |   |   |     |            |      |     |                  |       |
|-----|--------------------------------|---|-----|---|---|-----|------------|------|-----|------------------|-------|
| 2.1 | Subject name                   |   |     | Technical drawing and Infographics I  |   |     |            |      |     |                  |       |
| 2.2 | Subject area                   |   |     | Civil Engineering   |   |     |            |      |     |                  |       |
| 2.3 | Course responsible/lecturer    |   |     | N/A   |   |     |            |      |     |                  |       |
| 2.4 | Teachers in charge of seminars |   |     | Assist. Prof. PhD. Eng. Nerişanu Raluca – Raluca.Nerisanu@cfdp.utcluj.ro<br>Assist. PhD. Eng. Bărbos Gheorghe, Gheorghe.Barbos@cfdp.utcluj.ro |   |     |            |      |     |                  |       |
| 2.5 | Year of study                  | I | 2.6 | Semester  | 2 | 2.7 | Assessment | Exam | 2.8 | Subject category | FD/ID |

## 3. Estimated total time

|  |                                 |     |     |                   |   |     |               |          |
|--|---------------------------------|-----|-----|-------------------|---|-----|---------------|----------|
| 3.1  | Number of hours per week        | 3   | 3.2 | of which, course: | 0 | 3.3 | applications: | 3        |
| 3.4  | Total hours in the curriculum   | 42  | 3.5 | of which, course: | 0 | 3.6 | applications: | 42       |
| Individual study   |                                 |     |     |                   |   |     |               | 58 hours |
| Manual, lecture material and notes, bibliography                                 |                                 |     |     |                   |   |     |               | 20       |
| Supplementary study in the library, online and in the field                      |                                 |     |     |                   |   |     |               | 14       |
| Preparation for seminars/laboratory works, homework, reports, portfolios, essays |                                 |     |     |                   |   |     |               | 20       |
| Tutoring   |                                 |     |     |                   |   |     |               | 2        |
| Exams and tests  |                                 |     |     |                   |   |     |               | 2        |
| Other activities   |                                 |     |     |                   |   |     |               | -        |
| 3.7  | Total hours of individual study | 58  |     |                   |   |     |               |          |
| 3.8  | Total hours per semester        | 100 |     |                   |   |     |               |          |
| 3.9  | Number of credit points         | 4   |     |                   |   |     |               |          |

## 4. Pre-requisites (where appropriate)

|     |            |   |
|-----|------------|---|
| 4.1 | Curriculum | "Descriptive Geometry" classes passed.  |
| 4.2 | Competence | <ul style="list-style-type: none"> <li>to visualise the object or the assembly of objects in space (3D), based on plan representation (2D);</li> <li>to "read" different kinds (systems) of representations.</li> </ul> |

## 5. Requirements (where appropriate)

|     |                      |   |
|-----|----------------------|---|
| 5.1 | For the course       | N/A   |
| 5.2 | For the applications | Cluj-Napoca, Observatorului Street No. 72-74 – Classrooms equipped with drawing tables: O207, O208 – onsite |

## 6. Specific competences

|                          |                                      |   |
|--------------------------|--------------------------------------|---|
| Professional competences | Theoretical knowledge (what to know) | To know the fundamentals (basic elements) on the representation of the objects: the arrangement of the views, sections, dimensioning, representation scales, conventional signs used in civil engineering technical drawing.  |
|                          | Gained skills                        | <p>After completing the discipline, the students will be able to:</p> <ul style="list-style-type: none"> <li>• represent the volumes from the 3D space through 2D projections, complying with the norms for the arrangement of the views;</li> <li>• cut the solids and the construction elements; to place correctly this sections on the assembly drawing;</li> <li>• dimension the projections of the solids;</li> <li>• use the reduction and the magnifying scales;</li> <li>• use the conventional signs for the building materials;</li> <li>• represent the different construction elements.</li> </ul> |
|                          | Acquired skills                      | <p>After completing the discipline, the students will be able to:</p> <ul style="list-style-type: none"> <li>• draw freehand (sketches) for views and sections for objects having different degrees of difficulty, construction elements and simple structural subassemblies;</li> <li>• draw with drawing tools, at scale, the different construction elements.</li> </ul>   |
| Cross competences        |                                      | <ul style="list-style-type: none"> <li>• achieving of some correct graphical works, considering the representation norms in effect;</li> <li>• drafting and presenting a portfolio of drawings;</li> <li>• discussing about the applications with the teacher who leads the classes and with the colleagues; disseminate the results;</li> <li>• applying effective strategies and responsible work, punctuality, responsibility and personal accountability based on principles, norms and values of professional ethics;</li> <li>• acquainting with specific roles and teamwork activities.</li> </ul>       |

## 7. Discipline objectives (as results from the *key competences gained*)

|     |                     |  |
|-----|---------------------|--|
| 7.1 | General objective   | Recognition of the elements and structures of civil engineering constructions, specific for the program of study graduated |
| 7.2 | Specific objectives | Graphical representation at the scale for the designed or existing building elements (survey-based).                       |

## 8. Contents

|                               |   |  |   |
|-------------------------------|---|--|---|
| 8.1. Lecture (syllabus) – N/A |   | Teaching methods   | Notes   |
| -                             |   | -  | -   |
| Bibliography                  |   |  |   |
| 8.2. Applications/Seminars    |   | Teaching methods   | Notes   |
| 1.                            | Presenting the main provisions of the standards relating to: formats, lines used in civil engineering drawing, information boxes, scales, the conventional representation of materials, dimensioning, the arrangement of the views. | Conventional lecture, drawings made with classical tools and on computer, debates – onsite | Periodic verification is carried out through drawn works - onsite |
| 2.                            | Layout of orthographic projections. Views. Solids having various degrees of difficulty. The arrangement of the views for solids with low difficulty level.  |  |   |
| 3.                            | Presenting the main provisions of the standards relating to the sections and their placement on the drawing.  |  |   |

|   |  |  |  |
|---|--|--|--|
| 4.  | Layout of orthographic projections. Views. Sections. Solids having various degrees of difficulty. Solids with medium difficulty level. |  |  |
| 5.  | Representation and dimensioning of the masonry constructions.  |  |  |
| 6.  | Representation and dimensioning of wooden elements and constructions. Timber roof structure.   |  |  |
| 7.  | Representation and dimensioning of wooden elements and constructions. Timber roof structure. Sections.                                 |  |  |
| 8.  | Representation and dimensioning of wooden elements and constructions. Timber roof structure. Joint details.                            |  |  |
| 9.  | Representation and dimensioning of concrete elements and constructions. Slab reinforcement and formwork plan.                          |  |  |
| 10.   | Representation and dimensioning of concrete elements and constructions. Beam reinforcement. Drafting the list of reinforcement.        |  |  |
| 11.   | Representation and dimensioning of steel constructions. Bolted joint. Base of a steel column. Sections.                                |  |  |
| 12.   | Representation and dimensioning of steel constructions. Welded joint. Joint detail metal girder. Sections.                             |  |  |
| 13.   | Examination (Synthesis)  |  |  |
| 14.   | Final Exam.  |  |  |
| Bibliography: In the TUC-N library:<br>1. Delia Drăgan, Raluca Nerişanu, Adrian Tudoreanu: Civil Engineering Graphics-Grafică inginerască pentru Construcții, bilingual edition, Publisher U.T.Press Cluj-Napoca, 2019, 2021, 2023 Editions.<br>2. Delia Drăgan, Raluca Nerişanu, Adrian Tudoreanu: Civil Engineering Graphics-Grafică inginerască pentru Construcții, 2 <sup>nd</sup> Edition, bilingual edition, Publisher U.T.Press Cluj-Napoca, 2017.<br>3. Delia Drăgan, Raluca Nerişanu: Civil Engineering Graphics-Grafică inginerască pentru Construcții, bilingual edition, Publisher U.T.Press Cluj-Napoca, 2014.<br>4. Delia Drăgan, Radu Dardai, Dorin Bărbîntă, Claudia Alb, Raluca Nerişanu: Desen Tehnic și Infografică pentru Construcții, Civil Engineering Technical Drawing and Infographics, bilingual edition, Publisher U.T. Press Cluj-Napoca, 2011.<br>5. Vasile Iancău, Elena Zetea, ș.a.: Reprezentări geometrice și desen tehnic, București E.D.P., 1982.<br>6. *** Current Standards. |  |  |  |

## 9. Bridging course contents with the expectations of the representatives of the community, professional associations and employers in the field

Acquired skills will be required for employees who will work in design offices and for those who will work in execution.

## 10. Evaluation

| Activity type   | 10.1 Assessment criteria   | 10.2 Assessment methods                                     | 10.3 Weight in the final grade |
|---|--|---|--------------------------------|
| Course  | N/A  | N/A   | N/A                            |
| Applications  | ONSITE: The drawings made during the semester are collected in a portfolio of drawings.                                  | The examination paper will be scored.                       | 50%                            |
|   | ONSITE: Final exam consists in solving some applications closely related with the topics tackled during the semester (C) | Final exam, oral and written, with a duration of two hours. | 50%                            |
| NOTES: 1. The evaluation will be done onsite;<br>2. The teacher who is in charge with the workshop may decide that the written examinations / exams be followed by an oral presentation. Those who do not participate at the oral presentations lose their right to appeal. |  |   |                                |

|  |   |
|--|---|
| 10.4 Minimum standard of performance   |   |
| <b>(a) The eligibility conditions for taking part to the exam:</b><br>*The grade for the workshops (written in the electronic classbook): <b>WS: min. 5 (five)</b><br>** It is required to make a portfolio of drawings and a sketchbook.<br><b>The grade for the exam: E: min. 5 (five)</b> |   |
| The formula for obtaining the grade (G)  | $G = [1(E) + 1(WS)] / 2$<br>Condition for obtaining the credits: $G \geq 5$ , if $WS \geq 5$ and $E \geq 5$ . |

| Date of filling in | Persons in charge of | Title Surname NAME                      | Signature |
|--------------------|----------------------|---|-----------|
| 18.06.2025         | Course               | N/A                                     |           |
|                    | Applications         | Assist. Prof. PhD. Eng. Raluca NERIȘANU |           |
|                    |                      | Assist. PhD. Eng. Gheorghe BĂRBOS       |           |

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|---|---|
| Date of approval in the department      | Head of Department,                         |
| 19.06.2025                              | Assoc. Prof. PhD. Eng. Mihai Liviu DRAGOMIR |
| Date of approval in the Faculty Council | Dean,                                       |
| 25.06.2025                              | Prof. PhD. Eng. Daniela Lucia MANEA         |