

## 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                     | Civil Engineering and Management        |
| 1.4 | Field of study                 | Civil Engineering                       |
| 1.5 | Cycle of study                 | Bachelor of Science                     |
| 1.6 | Program of study/Qualification | Civil Engineering/ Engineer             |
| 1.7 | Form of education              | Full time                               |
| 1.8 | Subject code                   | 43.00                                   |

### 2. Data about the subject

|     |                                |   |     |          |                                  |     |            |      |     |                  |       |
|-----|--------------------------------|---|-----|----------|----------------------------------|-----|------------|------|-----|------------------|-------|
| 2.1 | Subject name                   |   |     |          | Building Services                |     |            |      |     |                  |       |
| 2.2 | Subject area                   |   |     |          | Civil Engineering                |     |            |      |     |                  |       |
| 2.3 | Course responsible/lecturer    |   |     |          | Assist. Ph.D. Eng. Babota Florin |     |            |      |     |                  |       |
| 2.4 | Teachers in charge of seminars |   |     |          | -                                |     |            |      |     |                  |       |
| 2.5 | Year of study                  | 3 | 2.6 | Semester | 1                                | 2.7 | Assessment | mark | 2.8 | Subject category | DD DI |

### 3. Estimated total time

|                                                                                  |                                 |    |     |                   |    |     |               |       |
|----------------------------------------------------------------------------------|---------------------------------|----|-----|-------------------|----|-----|---------------|-------|
| 3.1                                                                              | Number of hours per week        | 2  | 3.2 | of which, course: | 2  | 3.3 | applications: | 0     |
| 3.4                                                                              | Total hours in the curriculum   | 28 | 3.5 | of which, course: | 28 | 3.6 | applications: | 0     |
| Individual study                                                                 |                                 |    |     |                   |    |     |               | hours |
| Manual, lecture material and notes, bibliography                                 |                                 |    |     |                   |    |     |               | 12    |
| Supplementary study in the library, online and in the field                      |                                 |    |     |                   |    |     |               | 8     |
| Preparation for seminars/laboratory works, homework, reports, portfolios, essays |                                 |    |     |                   |    |     |               | 0     |
| Tutoring                                                                         |                                 |    |     |                   |    |     |               | 0     |
| Exams and tests                                                                  |                                 |    |     |                   |    |     |               | 2     |
| Other activities                                                                 |                                 |    |     |                   |    |     |               | 0     |
| 3.7                                                                              | Total hours of individual study | 22 |     |                   |    |     |               |       |
| 3.8                                                                              | Total hours per semester        | 50 |     |                   |    |     |               |       |
| 3.9                                                                              | Number of credit points         | 2  |     |                   |    |     |               |       |

### 4. Pre-requisites (where appropriate)

|     |            |   |
|-----|------------|---|
| 4.1 | Curriculum | - |
| 4.2 | Competence | - |

### 5. Requirements (where appropriate)

|     |                      |     |
|-----|----------------------|-----|
| 5.1 | For the course       | N/A |
| 5.2 | For the applications | -   |

## 6. Specific competences

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Professional competences | <p>C3.1. Ptechnological and economic design for execution, exploitation and maintenance of civil engineering constructions specific to the graduate study program.</p> <ul style="list-style-type: none"> <li>– Knowledge of the theory in the field of sanitary, thermal, electrical, gas and unconventional installations;</li> <li>– Understanding the characteristics of the activity of building services;</li> <li>– Understanding the relationships between the engineering engineers and installers, as well as the communication between them.</li> </ul> <p>C4.2. Specifying the material and human resources necessary for the execution, use and maintenance of civil, industrial and agricultural constructions</p> <ul style="list-style-type: none"> <li>– Identification of thermal and ventilation systems, sanitary, electrical and gas installations, etc. for a building services project;</li> </ul> |
| Cross competences        | <p>CT1. Application of effective and responsible work strategies, punctuality, seriousness and personal responsibility, based on the principles, norms and values of professional ethics.</p> <p>CT2. Application of effective teamwork techniques, on various hierarchical levels.</p> <p>CT3. Documentation in the Romanian language and in a language of international circulation, for professional and personal development, through continuous training and efficient adaptation to the new technical specifications.</p>                                                                                                                                                                                                                                                                                                                                                                                           |

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

|     |                     |                                                                                                                                                                                                                                                                         |
|-----|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.1 | General objective   | <ul style="list-style-type: none"> <li>- Be able to make the connection between resistance elements of the building and related facilities building.</li> <li>- Be able to work together with building services engineers</li> </ul>                                    |
| 7.2 | Specific objectives | <ul style="list-style-type: none"> <li>- To know the categories and types of builing services</li> <li>- To know the equipment and materials in building services</li> <li>- To know the functioning schemes of various types of building services equipment</li> </ul> |

## 8. Contents

| 8.1. Lecture (syllabus)                                   | Teaching methods | Notes |
|-----------------------------------------------------------|------------------|-------|
| 01. Presentation of the discipline. Introductory notions. | Oral presetation |       |
| 02. Pipes and fittings used in building services – part 1 |                  |       |
| 03. Pipes and fittings used in building services – part 2 |                  |       |
| 04. Indoor electrical installations                       |                  |       |
| 05. Exterior electrical installations                     |                  |       |
| 06. Interior sanitary installations                       |                  |       |
| 07. Exterior sanitary installations                       |                  |       |
| 08. Thermal and ventilation systems                       |                  |       |
| 09. Indoor gas installations                              |                  |       |
| 10. Exterior gas installations                            |                  |       |
| 11. Unconventional installations – part 1                 |                  |       |
| 12. Unconventional installations – part 2                 |                  |       |
| 13. Maintenance of building services                      |                  |       |

|                                              |                  |       |
|----------------------------------------------|------------------|-------|
| 14. Examination                              |                  |       |
| Bibliography                                 |                  |       |
| 1. Horea Dan – Instalații pentru construcții |                  |       |
| 8.2. Applications/Seminars                   | Teaching methods | Notes |
| -                                            |                  |       |
|                                              |                  |       |
| Bibliography                                 |                  |       |

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

Using industry-specific regulations , legislation on the works of execution and operation , professional software products , developed and competition Building Services Engineers Association in Romania

**10. Evaluation**

| Activity type                                  | 10.1 Assessment criteria                  | 10.2 Assessment methods | 10.3 Weight in the final grade |
|------------------------------------------------|-------------------------------------------|-------------------------|--------------------------------|
| 10.4 Course                                    | Knowing the content of training materials | Written test            | 100%                           |
| 10.5 Applications                              | -                                         | -                       | -                              |
| 10.6 Minimum standard of performance: $\geq 5$ |                                           |                         |                                |
|                                                |                                           |                         |                                |

| Date of filling in: |                                   | Title Surname Name               | Signature |
|---------------------|-----------------------------------|----------------------------------|-----------|
| 26.09.2019          | Lecturer                          | Assist. Ph.D. Eng. Babota Florin |           |
|                     | Teachers in charge of application | -                                |           |
|                     |                                   |                                  |           |

|                                                                     |                                                                   |
|---------------------------------------------------------------------|-------------------------------------------------------------------|
| Date of approval in the CEM department                              | Head of CEM department<br>Associate Prof. Ph.D. Eng. Claudiu ACIU |
| _____                                                               |                                                                   |
| Date of approval in the Council of the Faculty of Civil Engineering | Dean<br>Associate Prof. Ph.D. Eng. Nicolae CHIRA                  |
| _____                                                               |                                                                   |