**SYLLABUS**

## 1. Data about the program of study

| | | |
|---|---|---|
| 1.1 | Institution | The Technical University of Cluj-Napoca |
| 1.2 | Faculty | Faculty of Building Services Engineering |
| 1.3 | Department | Building Services Engineering |
| 1.4 | Field of study | Civil Engineering and Building Services |
| 1.5 | Cycle of study | Master |
| 1.6 | Program of study/Qualification | Building Services for Regenerative Cities / MS Engineer |
| 1.7 | Form of education | Full time |
| 1.8 | Subject code | 3.00 |

## 2. Data about the subject

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|---|---|---|---|---|---|---|---|
| 2.1 | Subject name | | | Digital Design and Fabrication | | | |
| 2.2 | Course responsible/lecturer | | | Lecturer Phd.Eng. Rusu Daniel Sorin | | | |
| 2.3 | Teachers in charge of seminars | | | Lecturer Phd.Eng. Rusu Daniel Sorin | | | |
| 2.4 Year of study | 1 | 2.5 Semester | 1 | 2.6 Assessment | | colloquy | |
| 2.7Subject category | Formative category | | | | | DA | |
| | Optional | | | | | DI | |

## 3. Estimated total time

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3.1 Number of hours per week | 2 | of which | 3.2 Course | 1 | 3.3 Seminar | | 3.3 Laboratory | 1 | 3.3 Project | |
| 3.4 Total hours in the curriculum | 28 | of which | 3.5 Course | 14 | 3.6 Seminar | | 3.6 Laboratory | 14 | 3.6 Project | |

| 3.7 Individual study: | |
|---|---|
| (a) Manual, lecture material and notes, bibliography | 14 |
| (b) Supplementary study in the library, online and in the field | 14 |
| (c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays | 14 |
| (d) Tutoring | 0 |
| (e) Exams and tests | 2 |
| (f) Other activities | 3 |

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|---|---|
| 3.8 Total hours of individual study (sum (3.7(a)…3.7(f))) | 47 |
| 3.9 Total hours per semester (3.4+3.8) | 75 |
| 3.10 Number of credit points | 3 |

## 4. Pre-requisites (where appropriate)

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|---|---|---|
| 4.1 | Curriculum | |
| 4.2 | Competence | Basic Knowledge of AutoCAD |

## 5. Requirements (where appropriate)

| | | |
|---|---|---|
| 5.1 | For the course | AutoCAD REVIT MEP |
| 5.2 | For the applications Seminar / laboratory / project | I206, I207, I208, I209 Bd. 21 December Nr. 128-130, Cluj-Napoca |

**6. Specific competences**

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|---|---|
| Professional competences | Understanding and knowing the basic notions of working with a BIM CAD software;<br>Learning the basic of REVIT MEP: Interface, keyboard shortcuts, views, families, basic creation tools, HVAC, Plumbing and Electrical modules;<br>Basic commands for construction elements;<br>Creation of selection sets and basic editing tools;<br>Work with different views of the project;<br>Spaces and zones editing;<br>Building Energy Performance Analysis;<br>Using the HVAC module;<br>Using the Hydronic Piping and Plumbing module;<br>Using the Electrical Systems module;<br>Scheduling, Detailing, Documentation, Work-sharing<br>Printing and presentation of project |
| Cross competences | Efficient using of information sources and communication resources, assisted professional training. |

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

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|---|---|---|
| 7.1 | General objective | Constructive and functional identification of building systems elements;<br>Sizing calculation and representation |
| 7.2 | Specific objectives | Graphic representation of Building systems<br>Data analysis output after using CAD and CAE software in building systems area. |

**8. Contents**

| 8.1. Lecture (syllabus) | Number of hours | Teaching methods | Notes |
|---|---|---|---|
| 1. Introduction in REVIT MEP | 2 | interactive teaching | Computes and required software |
| 2. Basic Editing Tools | 2 | | |
| 3. Building Energy Performance Analysis | 2 | | |
| 4. HVAC Module | 2 | | |
| 5. Hydronic Piping and Plumbing Module | 2 | | |
| 6. Electrical Systems Module | 2 | | |
| 7. Scheduling, Detailing, Documentation, Work-sharing, Printing and Presentation | 2 | | |

Bibliography

Autodesk Revit 2021: Fundamentals for MEP (Metric Units): Autodesk Authorized Publisher, Editor Ascent, Centre for Technical Knowledge, ISBN: 1952866111

Exploring Autodesk Revit 2018 for MEP, Sham Tickoo, Cadcim Technologies, ISBN: 1942689918

| 8.2. Seminar /Laboratory/Project | Number of hours | Teaching methods | Notes |
|---|---|---|---|
| 1. Starting a New Project, Views, Interface, Keyboard Shortcuts, Families, Basic Creation Tools | 2 | Exposition and applications | Computes and required software, video projector |
| 2. Spaces and Zones Editing | 2 | | |
| 3. Perform Building Energy Analyses | 2 | | |
| 4. Draw HVAC | 2 | | |
| 5. Draw Piping and Plumbing | 2 | | |
| 6. Draw Electrical Systems | 2 | | |
| 7. Finalize and Printing the Project | 2 | | |
| Bibliography<br>Virtual didactical models<br>Virtual examples;<br>PDF applications<br>PowerPoint presentations. | | | |

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

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| Once you have completed this training course, you will have developed the knowledge and skills necessary to be able to create your own projects in Revit MEP<br>Learn how to use Autodesk Revit MEP |

**10. Evaluation**

| Activity type | 10.1 Assessment criteria | 10.2 Assessment methods | 10.3 Weight in the final grade |
|---|---|---|---|
| 10.4 Course | Testing of acquired knowledge | Presentation | 50% |
| 10.5 Seminars /Laboratory/Project | Develop a project in REVIT MEP | Project evaluation | 50% |
| 10.6 Minimum standard of performance | | | |
| Completion of at least one module (HVAC, Plumbing, Electrical)<br>Seminar attendance is mandatory for examination<br>Final grade components: Testing acquired knowledge (E), project evaluation (P).<br>Final grade formula N=0.5xE+0.5xP<br>Credits obtained only if N>5, E>5, P>5. | | | |

| **Date of filling in:** | | **Title Surname Name** | **Signature** |
|---|---|---|---|
| 26.06.2024 | Lecturer | Lect.Phd.Eng. Rusu Daniel Sorin | |
| | Teachers in charge of application | Lect.Phd.Eng. Rusu Daniel Sorin | |
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| Date of approval in the Department of Building Services Engineering<br><br>27.06.2024 | Head of department<br>Assoc.Prof.PhD.Eng. Ciprian BACOŢIU |
| Date of approval in the Council of the Faculty of Building Services Engineering<br><br>27.06.2024 | Dean<br>Assoc.Prof.PhD.Eng. Florin DOMNIŢA |