

LATVIA UNIVERSITY OF LIFE SCIENCES AND TECHNOLOGIES
FACULTY OF ENVIRONMENT AND CIVIL ENGINEERING

APPROVED
by the academic staff meeting of
Department of Architecture and Construction
January 16, 2018

Construction Technology (II)

Jelgava

Programme

Code of the study course at LLU IS Register: BūvZ 4009, BūvZ 4010
Construction Technology I [full-time] – BūvZ 4074, 2CP (32 h):
lectures:16 h, lab.w. 16 h, Test,
Construction Technology II [part-time] – BūvZ 4009, 2.5 CP (32 h):
lectures16 h, lab.w. 16 h, Test, Course project 8 h, Examination
Construction Technology [Course project, full-time and part-time] –
BūvZ 4010, 1.5CP (24 h): Course project
Construction Technology III [full-time] – BūvZ 4062, 0.5 CP (8 h):
lectures 4 h, pract.w. 4 h, Course project, Examination
4.0 CP (112 h): lectures. h, lab. w. H, a course project, Test,
Examination.

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Compulsory course of the Bachelor's degree level study programme
“Civil Engineering” of the Faculty of Environment and Civil
Engineering included in the 4th year 7th and 8th semester.

Abstract:

During the study course students are required to work out an assembly design project for a framed industrial building. The project documentation consists of a written project description and graphical drawings. The written project description includes: specification lists of the necessary elements for assembly, evaluation of methods and buildings, construction work organization scheduling; calculations for temporary buildings, consumables and technical resources, evaluation of assembly quality standards and labour protection, technical and economic costs of the project. Graphical drawings include detailed technological schema of assembly works, the construction site master plan.

The aim of the study course:

The aim of the study course is to extend theoretical knowledge of construction technology, designing technological schemas for conducting work (for assembly work), as well as preparing a construction site master plan for the required time period. Students get acquainted and master the interconnection of the stages of construction of the building structures, their aspects and their impact on the planning schedule. Students acquire information on processes at the construction site and their relationship, as well as various technologies used for the construction of different structures.

Learning Outcomes (knowledge, skills and competence):

Upon the completion of this study course students will obtain:

- **knowledge** of basic concepts in the development of construction site master plan and detailed technological schemas of assembly work, reasons for the choice of a technology and a construction method, defining work tasks and their sequence, calculating time schedule and material resources, including electricity supply.
- **skills** to design detailed construction site master plans and technological schemas, including the relevant choice of technology, the definition of work tasks, the estimation of the required resources and duration of individual tasks, and the identification of any interactions among the different work tasks.
- **competence** in the selection and comparison of appropriate alternatives for developing construction site master plans and technological schemas, application of effective construction technology and methods, rational resource planning and usage, estimation of construction technological procedure, observation of requirements of spatial stress safety, construction regulations and other technical requirements

Relation of the study course with other subjects:

Students should have the prior knowledge of the following study courses:

BüvZ3114 Construction Processes I [Civil Engineering, full-time, 2nd level 6th semester, part-time 5th semester], Civil Engineering, 2nd level 6th semester, part-time 5th semester]; BüvZ3114 Construction Processes I [Civil Engineering, full-time, Civil Engineering, 2nd level full-time 6th semester, part-time 5th semester]; BüvZ4071 Construction Processes II [Civil Engineering, full-time 7th semester]; BüvZ2036 Construction Materials I [Civil Engineering, 2nd level part-time 1st semester]; BüvZ2036 Construction Materials I [Civil Engineering, 2nd level part-time 1st semester]; BüvZ3091 Construction Machines I [Civil Engineering, 2nd level]; BüvZ2040 Structural Mechanics I [Civil Engineering, full-time, Civil Engineering, 2nd level 4th semester]; BüvZ3078 Structural Mechanics II; BüvZ3104 Soil Mechanics and Foundations I [Civil Engineering, full-time, 5th semester from 2015/16]; BüvZ4041 Concrete and Masonry Structures II [Civil

Engineering, full-time; Civil Engineering, 2nd level full-time 6th semester, part-time 7th semester].

Requirements for individual work:

Submitted and presented practical works:

1. Obtaining initial additional data from the available sources of literature in accordance with the location of a building as well as using ArcGIS software;
2. Elaboration of the explanatory part of the course project according to the requirements of the extended programme.
3. Implementation of the graphic part of the course project (a technological schema and a construction site master plan).

Assessment of knowledge:

Every week students show a lecturer the completed tasks according to the topic of the explanatory part.

Requirements for receiving a grade at the formal test.

- The successfully passed examination (the grade is above 4);
- The completed course project in the written form of (a hard copy bound in the binder) including an explanatory part and a graphic part) and presented in front of the lecturer.

The students are admitted to the presentation of the course project after a successful pass at the examination.

Procedure and requirements for settling missed lectures:

According to the procedure approved by the department.

**Extended content of the programme
(weekly plan for completing tasks)**

1. Introduction. Characteristics of a construction site (volume, usage, location, technical execution). Application and integration of ArcGIS program data in a site location and project feasibility calculations.
2. Determination of work volume and procedure (specifications of assembly elements).
3. Choice of gripping tools and determination of mounting parameters.
4. Determination of assembly parameters using graphical and analytical method.
5. Choice of assembly methods and cranes by parameters of assembling structures.
6. Technical and feasibility analysis of adopted assembling methods and cranes.
7. Techniques and technological sequence of construction process implementation. Calculations of labour intensity.
8. Technological calculation of duration of construction processes.

9. The schedule of the combined assembly process and the schedule of workers' movement.
10. Description of the approved techniques in the assembly work and their technological sequence.
11. Planning of the required warehouses, temporary administrative and accommodation buildings.
12. Identification and design of hazardous areas.
13. Calculation of the required materials and technical resources.
14. Quality control of assembly work. Labour protection measures.
15. Development of individual technological schemas for assembly work. Design of a construction site plan.
16. Feasibility analysis (technical and economic aspects) of the project.

Bibliography

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4. Conditions of contract for works of civil engineering construction. Part I – General conditions with forms of tender and agreement
5. Conditions of contract for works of civil engineering construction. Part II – Conditions of particular application with guidelines for preparation of part II clauses
6. Client/Consultant Model services agreement. Part I – Standard conditions; Part II Conditions of particular application.
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