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
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Practical Training in Building Processes

Jelgava

Programme

Code of the study course at LLU IS Register BūvZP032
3 CP (3 weeks) Type of assessment: Formal test. (G)
The authors: Raitis Brencis, Associated professor of the Department of Architecture and Construction,
Ilmārs Preikšs, lecturer of the Department of Architecture and Construction
Compulsory course "Professional technological practice", the speciality of Civil Engineering, 2nd semester of the 3rd year semester of full-time studies.

Abstract:

Students get acquainted with building processes on the construction site, the formation of teams and the quality requirements for implementation of the necessary processes as well as responsibilities and duties of a foreman and manager, project documentation and its circulation on the site. Students get acquainted with the latest construction machinery and technological processes, including the use of ArcGIS software or its products. Students perform analysis and prepare their practical training report.

The aim of the study course

The aim is to extend and deepen students' theoretical knowledge. Students obtain information on the ongoing processes on the construction site, their mutual relationship. They acquire practical skills in building management.

Learning outcomes (knowledge, skills and competence):

Upon completing the course students will have acquired:

- **knowledge** of technological processes in construction, human resources movement and required documentation on the construction site;
- **skills** of the construction process organization, management, documentation handling, quality control and movement of construction materials;
- **competence** in construction management, team formation, handling of construction site documentation and construction technological processes.

Relation of the study course with other subjects:

Students previously should have studied the study courses "Technological processes of construction", "Construction machines", Parts of a building and architecture" "Construction materials".

Requirements for individual work:
The practical training report (number of pages 15-20) according to the guidelines. The report should include a student's evaluation regarding possibilities of application of ArcGIS software or their products in the respective practice placement (for the tasks of practical training).

Assessment of knowledge:
Presentation of the report in front of the commission approved by the department.

Procedure and requirements for settling absences:
The period of unexcused absences should be settled by the student by doing practice tasks in another time.

Extended content of the programme
(Practical training in construction companies)

1. **Aims and objectives of practical training:**

- development of construction management skills;
- an insight into ongoing processes on the site;
- familiarization with the technological documentation at the construction site;
- an overview of activities of a construction company;
- collection of the necessary materials for the practical training report.

2. **The place and supervision of practical training:**

- place of practical training is a building company or organization;
- during the practical training the student has a supervisor appointed by the company, performs the tasks given by the supervisor. In certain cases, if students previously had a construction worker's training, they may perform the duties of a foreman or a backup;
- the student is obliged to observe internal rules of a company. The working day of the student is equal to the working time of the engineering staff;
- the student together with the supervisor work out the schedule for implementation in accordance with the practical training programme;
- the student gets acquainted with the rules of labour safety and labour protection at the construction site;
- it is not allowed to appoint the trainee to work as a manual worker in the execution of manual work and auxiliary work.

3. **Content of practical training:**

During practical training a supervisor representing a company gives tasks to the student which are related to the organization of work at the construction site, as well as the student gets acquainted with processes at the construction site(s). Consequently, the student includes the following points in his/her practical training report:

3.1. General information about work organization on the construction site:

- the organizational structure of general and specialist work management on the construction site (the report provides a management scheme);
- description of works of a preparatory period (engineering networks, access roads, temporary buildings, etc.) necessary before the beginning of construction;
- description of technological documentation (a project documentation, a journal of recorded completed work, etc.);
- fire safety and labour protection measures on the construction site.

3.2. Characteristics of architectural aspects of buildings:

- General characteristics of a building (the number of floors, cubature, area, technical indicators, etc.); architectural and constructive solutions (facades, cuts, plans, cross-sections).

3.3. Work organization and implementation methods:

- acquaintance with earth moving work, masonry, assembly, roofing, finishing, etc. work, focusing on the organization, technology and quality;
- formation of teams and labour division among team members;
- preparing a work task for teams or individual workers, a payment system, system of incentives;
- labour protection measures at the construction site (existence of a labour protection plan), accident registration and preventive measures for the prevention of accidents, compliance with fire safety regulations;
- losses of building materials on the construction site (the student's observations), reasons and measures for their prevention;
- procedure of receiving, issue and storage of materials and structures;
- provision of manual tools for the execution of specific work, their storage and issue procedures;
- efficiency of construction machinery use; evaluation of working hours of machinery, observance of labour safety requirements;
- analysis of the quality of performed work, comparison with the requirements of construction rules and regulations;
- evaluation as a summary of the student's personal observations, discussions with construction specialists and the supervisor of the practical training.

4. Tours to other construction sites.

- Tours to other construction sites are organized by a supervisor representing a company. The construction sites should be significantly different from the one where the student trains. During the tour the student shall get acquainted with interesting work technologies and different materials collecting information for the report.

5. Content and layout of the report:

- The report is written by each student independently. The report is a single technically correct description illustrated with drawings, diagrams, photographs. The report should be based on the design of the project, budget estimate, completion and acceptance requirements, technical documentation on the construction site.
- The report should have a title page, a table of contents, Bibliography, and supplements.

The report contains the following parts:

1. *Introduction;*
2. *Description of architectural and structural aspects of the building;*
3. *Work organisation and implementation methods;*
4. *Tours to the construction sites;*
5. *Evaluation of practical training.*

The report should contain not only the reflection of factual information about implementation of specific processes on the construction site, but also the student's evaluation of the situation in the framework of his/her competence.

The report should include:

- Management structure of a building company, specialization, financial data of the completed projects of the previous period (2-3 years);
- Short description of the building and its technical characteristics (construction site plan, floor plan, cuts, cross-sections etc.) which provides a general overview of the building;

- Situation at the construction site at the beginning of the traineeship period (a brief description of completed and current work);
- Description of the most important tasks during the traineeship (according to types of tasks), methods of work, their analysis, quality evaluation;
- Formation of teams, payment system, employee incentive methods;
- Usage of construction machines, evaluation of their efficiency;
- Usage of construction materials, structures, storage and proper use of construction tools;
- Technical and technological documentation of the project at the construction site (technical project, work implementation project, journal of recording work tasks, covered operations etc.), their availability;
- Labour safety measures at the construction site (availability of labour safety plan, organisation of instructions, provision of labour protection means etc.);
- Short description of a building visited during a tour (description of architecture and structures, latest technological solutions, used materials);
- Evaluation of possibility of application of ArcGIS or its products in relevant traineeship tasks;
- Evaluation based on argumentation of the practical training by the student.

Extended content of the programme
(Practical training in the design companies)

1. Aims and objectives of the practical training:
- development of designing skills;
- acquaintance with project documentation;
- an insight into activities of a company;
- an insight into processes at the construction site;
- collection of the necessary materials for the report.

2. Place and supervision of the practical training:
- place: a design company or organisation;
- during the traineeship, the student has a supervisor appointed by the company, performs tasks given by the supervisor;
- student has to observe the internal rules of the company; the length of a work day equals with the working day of engineering staff;
- the students together with the supervisor from the company works out the traineeship schedule;
- the student gets acquainted with the labour safety and labour protection regulations.

3. Content of the practical training:
During practical training the student performs the tasks given by a supervisor representing a company which are related to designing, as well as the student gets acquainted with processes at the construction site(s). Consequently, the student includes the following points in his/her practical training report:

3.1. General information about the designed building:
- A customer;
- Design organisations involved in design work;

3.2. Characteristics of architectural aspects of buildings:
- General characteristics of buildings (number of floors, cubature, area, technical indicators, etc.); architectural and constructive solutions (facades, cuts, plans, cross-sections).

3.3. Work organization and implementation methods:

- equipment, software used in design;
- calculations performed in the specific design work;
- legislation used in design work, bibliography and other necessary materials;
- a summary of the student's evaluation, personal observations, discussions with design specialists and the supervisor of the practical training.

4. Tours to other construction sites.

- Tours to other construction sites are organized by a supervisor representing a company. These sites could be construction sites where design of the design company are being implemented.
- During the tour the student gets acquainted with earth moving work, masonry, assembly, roofing, finishing, etc. work, focusing on the organization, technology and quality;
- labour protection measures at the construction site (availability of a labour protection plan), accident registration and preventive measures for the prevention of accidents, compliance with fire safety regulations;
- the student analyses the quality of the work comparing it with the design requirements and building regulations;
- the practical training report should include the evaluation that comes from the student's personal observations, discussions with builders and a supervisor.

5. Content and layout of the report:

- The report is written by each student independently. The report is a single technically correct description, illustrated with drawings, diagrams, photographs.
- The report should have a title page, a table of contents, Bibliography, and supplements.

The report contains the following parts:

1. Introduction;
2. Description of architectural and structural aspects of the building;
3. Work organisation and implementation methods;
4. Tours to the construction sites;
5. Evaluation of practical training.

The report should contain not only the reflection of factual information about implementation of specific processes on the construction site, but also the student's evaluation of the situation in the framework of his/her competence.

The report should include:

- Management structure of a design company, specialization, financial data of the completed projects of the previous period (2-3 years);
- Short description of the project and its technical characteristics (construction site plan, floor plan, cuts, cross-sections, etc.) which provides a general overview of the building;
- Design works implemented during the practical training period: drawings, diagrams, calculations, surveys etc.;
- Payment system of design work, employee incentive system;
- Short description of a building visited during a tour (description of architecture and structure, latest technological solutions, used materials, technical and technological documentation of the project, technical project, work implementation project, journal of recording work tasks, covered operations, labour protection measures on the site, etc.);
- Evaluation of possibility of application of ArcGIS or its products in relevant traineeship tasks;

- Evaluation of the practical training by the student.

The report materials should be collected during the traineeship, but the report should be prepared in the last 2-3 days. At the end of the traineeship, the student must receive a feedback from the supervisor representing the company, approved by the head of the company.

Presentation of the report.

- The student submits the practical training report, an appointment document and a reference within two weeks after the completion of the traineeship to a supervisor from the department of Department of Architecture and Construction, LLU;
- the presentation of the report takes place according to schedule approved by the head of the Department of Architecture and Construction.
- The presentation of the practical training report takes place in front of the commission which includes the supervisor from Department of Architecture and Construction and members of commission. The commission includes representatives of LLU and construction companies.
- if the report is neither submitted or presented in the scheduled time, the procedure should be repeated.

Weekly planning of the practical training:

1. Getting to know a construction company, its activities and a construction site. Getting acquainted with the responsibilities of a construction manager.
2. Completion of an individual task. Getting to know technological documentation for the construction site.
3. Tours to companies. Work organisation on the construction site. Working on the compilation of the report.

Bibliography:

Compulsory reading:

1. Ē.Bērziņš,P.Kārkliņš,I.Lejnieks *Būvdarbu tehnoloģija un organizēšana*. Rīga, 1993.
2. *Būvniecības vadības rokasgrāmata*. Dienas bizness, Rīga, 2006.
3. Vispārīgie būvnoteikumi. Apstiprināti MK 01.04.1997. Nr. 112.
4. Под ред. Н.Н.Данилова *Технология строительных процессов*. Вышая школа, Москва, 2001.

Further reading:

1. Noteikumi par Latvijas būvnormatīvu *LBN 310-05 "Darbu veikšanas projekts"*, MK noteikumi Nr.395, 2005.gada 7.jūnijā.
2. LBN 304-03. Būvdarbu autoruzraudzības noteikumi
3. LBN 303-97. Būvuzraudzības noteikumi
4. žurnāls "Latvijas būvniecība", *ISSN* 1691-4058.