Introduction

- **BMEEPEKA701**
- **CM3 - Planning of construction technology**
- Dr. Adrienn Lepel, Dr. István Vidovszky
- **Requirements**
  - 1 mid-semester test.
  - Presence on at least 70% of the practices.
  - Preparation of all practical exercises on the practices.
  - Exam.
Introduction

- **Main topics**
  - Planning the technology of the construction work process.
  - Construction of steel structures.
  - Masonry, bricklaying.
  - Doors and windows, curtain walls. Brick, stone, plastered and rendered façades, façade coverings.

- **Main topics**
  - Carpentry, roof coverings, metal roof work.
  - Thermal and water insulation. Flat roofs. Bitumen and PVC, etc.
  - Assembled partitions, suspended ceiling, dry-floors, raised floor.
  - Interior flooring and wall coverings. Concrete screeds.
  - Building diagnostics and refurbishment.
Planning the technology of the construction work process.

Basic terms. WBS.

Basic terms

- Construction
  - is a kind of technical project in accordance with an investment of a real estate, where a part of a building or a whole building is established or restored.

- Construction work process
  - starts with setting up the site, followed by constructing the sub- and superstructure, then finishing, and building installations.
Basic terms

- Technology
  - is the sum of all work process regarding to one work activity.
  - The know-how of the construction.

- Work activity
  - Is the basic element of the construction, closed technological interval.

Basic terms

- Steps of planning the technologies of construction processes
  1. Defining the task
     1. Building = the sum of all building construction elements
     2. Constructing the building = constructing all building construction elements
  2. Defining the way of realisation = technologies
     1. Selecting technology for each building constr. element
     2. Defining the order of technologies = time sequence
     3. Defining and covering the conditions of the technologies
Basic terms

- **Work Breakdown Structure (WBS)**
  - It is a technique for breaking down a total job into its component elements;
  - It is a tool used to define and group a project's discrete work elements in a way that helps organize and define the total work scope of the project;
  - It is NOT a project plan, a schedule, or a chronological listing.

Basic terms

- **List of operations (activities)**
  - All (and only) the **required activities** of the construction.
  - There are activities for completing building construction elements – **direct activities** (e.g. FLOORING WITH 30x30cm glazed ceramic TILE fixed with adhesive glue)
  - There are **indirect activities** needed to complete technology processes, like formworks, scaffolding, propping, etc.
  - **Exact technical content** needed for all activities: WHAT? HOW? WHERE?
Planning the technologies

- Selecting technology – aspects of selection
  - technical circumstances
  - cost
  - required time $\rightarrow$ cost
  - workability / viability
  - requirements in equipment / tools

Planning the technologies

- WBS
  - WBS includes 100% of the work defined by the project scope (all that is needed to finish the building).
  - There is no overlap in scope definition between two elements of a work breakdown structure.
  - Levels in WBS – there are no defined levels – depends on the task
    17. Steel works
    17.01. Prefabrication of reinforcement
    17.01.01. Cutting and bending reinforcing bars
Planning the technologies

- Building processes
  - Construction of substructure
    - Excavating
    - Creating foundation
  - Construction of superstructure
    - Formwork
    - Concrete reinforcement
    - Concreting
    - Masonry works (loadbearing walls)

- Building processes
  - Finishing works
    - Carpentry
    - Joinery
    - Roof covering
    - Tinwork
    - Locksmith’s work (ironwork)
    - Glasswork
    - Tiler, paver works
    - Parquetmaker works
    - Painting
    - Insulation works
    - Masonry of inner walls, (bricklaying, plastering)
    - Exterior facings
    - Drywall construction
    - + applied arts and historical technologies
    - + building services
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**Carpentry** – roof superstructures, wooden frame structures, formwork (traditional)

**Joinery** – wooden doors & windows, wooden structures, interior fix furniture

**Roof covering** – covering pitched roof by slate, thatch, different tiles etc.

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Planning the technologies

**Tinwork** – flashings by the gable, the eaves and gutter

**Locksmith’s work, ironwork** – gates, railings, grills, steel frame structures etc.

**Glasswork** – window glasses, glass walls, etc.
Planning the technologies

**Tiler, paver parquetmaker works** – etc.

**Painting** – painting walls, pipes, steel structures, windows, doors

**Insulation works** – thermal and waterproof insulation on flat roofs, facade etc.

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**Plasterboard** – drywall construction

**Masonry** – inner walls, plastering (rendering), concrete finishing

**Exterior facing** – plaster, stone, brick, wood, metal etc.
Planning the technologies

- Time sequence of the activities
  - Depending on the technological and organisational conditions
  - Between the limits of technical feasibility the sequence can vary
    - interior plaster – fitting windows – exterior plaster
    - fitting windows – exterior plaster – interior plaster
    - exterior plaster – fitting windows – interior plaster
    - interior plaster – exterior plaster – fitting windows

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- Time sequence of the activities

DEFINE POINTS A & B !!!

earliest time: when the inner spaces are waterproof

either external or internal works are finished
Planning the technologies

- Priorities in planning the time sequence
  - Deadline (scheduling)
  - Costs (e.g. minimising the costs, or cash-flow)
  - Site organisation

- Limitations
  - Protecting finished parts
  - Allowing adequate working space
  - Technological intervals (e.g. solidifiing of the concrete)