



## Requirements for the structural part of Complex and Diploma

In the following, we present the requirements for Comprehensive (Complex) Design and Diploma Project courses together in one unified system. The objectives of structural design in these courses are:

- choosing a stable and correct structural system;
- finding „good compromise" between satisfying the architectural, functional, building energetics, constructional needs and choosing the „ideal" structural solution;
- not necessarily aiming economical design, but understanding the cost implications of selecting a structural system;
- sizing of the main/most interesting load-bearing elements;
- getting to know/practicing the visual communication of structural concepts;

	Draft plan signature (structural draft)	Final signature	Technical description	Structural sketches	Structural analysis (calculations)	Construction plans
Departmental project 3.	+	+	+	+	+	-
Comprehensive design 1.	+	+	+	+	+	-
Comprehensive design 2.	+	+	+	+	+	+
Diploma (5-MSc-BSc new)	+	-	+	+	+	-
Diploma structural spec.	+	-	+	+	+	+
BSC dipl. 1 (old)	+	+	+	+	+	-
BSC dipl. 2 (old)	+	+	+	+	+	+

**Draft plan signature:** To gain a draft plan signature, students must *participate at a minimum of two consultations*, present the architectural concept, and choose a realistic structural system with the consultant's help. *The draft plan submission is a one-page summary of the load-bearing structures of the building with structural drafts. The structural part has the same deadline as the architectural draft plan.*

**Final signature:** Participation at a minimum of two more consultations is required. The student must present parts of the structural submission in progress. The final signature does not imply course completion! *All the parts listed above must be submitted, delivering an appropriate quality (regarding content and appearance) to complete the course!*

**Technical description:** *It specifically describes the structural system of the designed building.*

It presents

- the collected geotechnical data of the location (visiting the Lechner Knowledge Center is suggested);
- the characteristics of the location and the neighboring buildings (if applicable);
- the load-bearing elements of the building from the bottom to the top, and the path of the loads until they are transferred to the soil;
- the idealized model of the structural system, the spans, the dilatation blocks, and the bracing system of the building;
- the considered permanent and variable loads (live, meteorological, exceptional: seismic or fire loads).
- the fire safety classification and the requirements of the structural system and the concept of their satisfaction (specifically in the designed structure);
- the main dimensions of the structure, profiles, material grades.
- *It does not present details of other disciplines and general rules!*

**Structural sketches:** They present the structural system of the building correspondingly to its characteristics (foundation, floor plans, sections, perspective views). The drawings must show the dimensions of the building, the load-bearing directions, and the bracing system. *These are not structural plans only sketches placed on A4-A3 sheets as appendices of the Technical description.*

**Structural analysis (calculations):** Checking of a critical or interesting load-bearing element, selected by the consultant. The calculations should contain the idealized model and the loads acting on the structure, calculating the internal forces, choosing the cross-sections, and checking in serviceability limit state (according to the student's specialization). The calculations should be carried out manually, but optionally a FEM (finite element method) software can be used to calculate the internal forces. However, documentation of the input data and interpretation of the output is always compulsory! *We highly recommend hand-written documentation of the calculations!*

**Construction plans:** It presents one part of the building selected by the consultant. The drawing scale and the level of detail both depend on the properties of the selected part. *A Construction plan is a technical drawing with quantity reports.*