



FACULTY OF ARCHITECTURE, CTU IN PRAGUE

**Examination Issues for the Final State Exam in the Course
Block BUILDING ECONOMICS and MANAGEMENT**

Architecture and Urbanism Master follow-up degree
program

Guarantee of the Final State Exam – Department of Building Construction
15 124

The condition for the SE is the successful completion of the specified courses:

- **Economics**
- **Building Technology and Management II**
- **Law**

PRINCIPLE AND EXAM ISSUES

PRINCIPLE

The master's final examination should verify the student's ability to approach independently the problem/assignment solved and to introduce the manner of its solution. The state examination differs

from the ordinary examinations in particular subjects in its form: this examination does not primarily require a number of partial information and data but, on the contrary, it concentrates on the depth of the theme comprehension and the quality of the creative approach. Therefore, the main essence is not a presentation of encyclopedic knowledge but a debate on the theme. The student presents his own understanding of the theme (cc. 7 min) and consequently answers the complementary questions of the examining board (cc. 7 min). The capability of orientation in the thematical area is assessed as is finding phenomena, information and approaches substantial for the architectural design and depth of knowledge. The source material for preparation for the exam is primarily the content of requisite subjects of the master's study at FA CTU and the relevant literature. Gathering knowledge of relevant themes from other subjects within the study and from individual sources is also required.

SOURCE MATERIALS

The source material for the examination is primarily the content of the compulsory subjects within the master study program at FA CTU and the corresponding literature. Supposed is also acquiring knowledge of the themes concerned and of the other subjects within the study program and from individual sources as well. An essential part of the answers will be introducing examples from practice, i.e. possibilities of real utilization of the particular knowledge, i.e. links to both theoretical and practical sources.



01. 1. Position of an architect in each particular stage of scheduling and implementation in the building process.

- Orientation of a future graduate from the Faculty of Architecture in the environment of market economy and in the stages of the projects life cycle
- Basic economic problem, macroeconomic cycle.
- Building market, its basic characteristics, and specific properties of structural engineering.
- Contractors system, mechanism of building market, offer and demand.
- Organization of the investment process, participation of the architect, investor, contractor and further subjects in the scheduling and implementation in the building process (DaB, PFI).

02. Setting the total project costs, architects and engineering works as a part of architectural studies and designs.

- The structure of the carried out design and engineering activities in the scheduling and implementation of buildings. Hourly rates.
- Setting the demand factor expressing the character, function, significance and purpose of the building (commission).
- The way of setting the price, composition of the bidding price, its calculation, costs, price negotiation, price contract.
- The bidding budget in the preliminary project scheduling, background papers and instruments for the working out of the budget for the building costs setting.

03. Total costs of the project, their purpose and content necessary for the process of decision and the evaluation of the investment building-up.

- The estimation of total costs of the building in the scheduling stage of the investment cycle as one of the important background papers for the decision on further stages of the investment.
- The characteristics of essential component parts of the building with regard to its future utilization and necessary costs.
- The role of depreciation quota on project efficiency.

04. Investments, capital expenses, economic efficiency.

- Characteristics of investments, their forms, the meaning of "to invest".
- Investment, its constituents and their importance for economic efficiency.
- Economic opportunities and criteria for their evaluation.
- Principles of the economic efficiency measurement.
- Basic quantities entering into the investment evaluation, costs, sales, revenues, interests, creation of profit, labour productivity.
- Indicators of economization – efficiency, their purpose and significance. Economic efficiency of a project and its criteria.

05. Techno-economic study within project phases (feasibility study).

- Formulation of commercial, technological, financial and economic requirements for the project (opportunity study, PEST anal.).
- The position of the architect in the relationship: client (customer), public concern, environment, within the observation of safety regulations during the performance, utilization, hygienic requirements and purposeful expenditure of financial means (EIA, IPPC).
- Principles of variant solution. Setting the project objectives, size and location.
- Basic characteristics of marketing and its strategies.
- Financial and economic aspects of the project. Initial – in use – manufacturing – decommissioning – disposal cost.



06. Utilization of decision methods during the choice of architectural, construction and material variants.

- The process of decision as an inseparable part of influencing the process of the architect's activities.
- Rules of the decision process, analysis of the problem, determination of objectives and criteria, the setting of alternatives, measurement of usability and risks under one or more criteria.
- Choice of an alternative under security and under risk conditions. The role of information.

07. Construction process project CPP - Spatial structure (SS),

- CPP characteristics, structures of CPP and their basic characteristics; relationships between structures during the process of construction project; the importance of CPP for planning, processing project documentation and building construction.
- What does spatial structure solve? Characteristics of SS, Spatial structure units and their description, SS documents, The influence of spatial structure on the urban solution of the building; the importance of the spatial structure for the preparation and progress of the construction, the scheme of the construction process – site plan, aspects of the spatial structure and their characteristics for dividing the construction site into individual construction works. Types of construction work.

08. Construction process project - Technological structure (TS),

- What does technological structure solve? Specifics of TS in the building industry, solution of the technological structure of the construction side and objects; sources and units of TS; documents of TS, the most important TS parameters,
- List the technological stages in time sequence and describe what they consist of.

09. Construction process project - Time structure

- What does time structure solve?; Documents and Methods of time planning - types of time plans, List the possible forms of time plans, their advantages, disadvantages and uses. Division into static and dynamic methods. What are the possible sources of CS? What is the importance of time planning in general and what is the importance of pre-production and production preparation.
- Describe in detail the space-time graph - duration calculation; combined activities, their development and duration, the effect of a technological break. Links between activities.
- Describe the methods of network analysis. Define the basic elements of a network graph, nodes, activities, activities in blocks, preparatory activities and conditions, what are the links of activities and especially what are the necessary rules. Sketch a network graphical representation for each type of graph, explain the paths in the network graph, determine the durations of the activities, calculate the critical path and determine the duration of the project incl. reserve.

10. Construction process project – Building site (BS)

- BS documents. Solution of construction operations in the preparatory phase of the investment process and during construction, purpose and processing; construction site occupations; construction site transport (horizontal, vertical), off-site transport and transport measures, entrances and exits at the construction site; construction site equipment objects - permanent, rental, temporary objects, areas needed for construction site equipment; connection of the construction site to the media;
- Individual Phases of BS with its transformation during the construction process. Documents needed to develop a construction site equipment project. Implementation of constructions in protection zones; environmental protection during construction process.



11. Constitutional system, Building Act and related provisions

- Constitutional system
- Hierarchy of law regulations in the Czech law system: Acts (Acts in a General Position vs. Acts in a Special Position) - Decrees and Government regulations - Technical Standards
- Fields of Law - Substantive and Procedural Law - Private and Public Law
- Building Act and broader legal context
- Land and urban planning
- Building code as a part of the Building Act
- Administrative procedures according to the Building Act; general and special building authorities
- External/Concerned state authorities in administrative procedures according to the Building Act
- General technical requirements on structures
- Technical standards
- Competencies and duties of professionals according to the Building Act (activities of authorized persons, other persons with regulated activities and activities of authorized inspectors)

12. Architectural education and certification, performance of the architectural profession, heritage preservation

- Charter of Architectural Education
- Academic and professional recognition of education
- Bologna process and European higher education area
- Authorisation Act
- Competencies and duties of chambers (Czech Chamber of Architects, Czech Chamber of Authorised Engineers and Technicians active in Construction)
- Competencies and duties of authorised persons
- Legal conditions of independent performance of the architectural profession
- Contract between an architect and a client (as a private or a business person), design costs
- Responsibility for a design of a building or a structure, author's supervision of the construction
- Heritage preservation (a brief history of the heritage preservation, international charters, conventions and institutions on the heritage protection, Heritage law in the Czech Republic)

Prague 20.9.2024