# BUILDING CONSTRUCTION IV. 2022/23. 2. SEMESTER

| BASIC INFORMATION | | | | |
|---|---|---|---|---|
| **COURSE NAME** | | | **Building construction IV.** | |
| **COURSE CODE(S)** | YARÉSZ4BNF | | | |
| **DEPARTMEN** | Óbuda University Ybl Miklós Faculty of Architecture, Institute of Architecture | | | |
| **PROGRAMME, TRAINING** | Architect BSc | | Full time | |
| **COURSE INSTRUCTOR (Instructor managing the course)** | Dr. Vizi Gergely Norbert PhD, adjunktus | vizi.gergely.norbert@ ybl.uni-obuda.hu | | |
| **LECTURERS** | | | | |
| | Janurikné Soltész Erika mesteroktató | janurikne.soltesz.erika@ ybl.uni-obuda.hu | | |
| | | | | |
| **PRE-REQUIREMENT** | Building materials, Building Construction III. | | **HOURS OF LECTURES (WEEKLY)** | 2 hours |
| **HOURS OF CLASSROOM PRACTICE (WEEKLY)** | 2 hours | | **FIELD AND TRAINING (WEEKLY)** | 0 óra |
| **ASSIGNMENT** | semester projects, Tests, and exam | | **CREDITS** | 4 credits |
| **BRIEF DESCRIPTION** | • Throughout the semester we will examine the following areas of building construction:<br>- the structure of factories and warehouses.<br>- Waterproofing, structures of flat roofs<br>- Waterproofing, structures of substructures<br>- Waterproofing in bathrooms and showers<br>- Heat insulation and structure of habitable attics.<br>• Preparation steps for building primer and seconder structures. Building process, Pre-requests and follow up work of the studied structures. Connecting professions like building engineering. | | | |
| **AIM OF THE COURSE** | • Technical drawing as the language of architecture. To be able to draw and design well-constructed buildings even in the process of designing the building itself.<br>• Preparing the building process, technological instruction, getting familiar with the aspects of worksite safety<br>• Education for independent creative, planned, precise and demanding engineering work | | | |
| **TECHNICAL EQUIPMENT REQUIRED** | During the tests and exams, the use of mobile phones or other tools is prohibited<br>• contact: Neptun system, E-learning system, and e-mail.<br>• teaching materials: On E-learning system, and you must take notes during the lectures...<br>• lectures: ruler, pencil, paper; in person, or in case of closedown: E-learning, Zoom | | | |
| **RECOMMENDED LITERATURE -**<br>**(Building Construction)** | • dr. Gábor László (2006): Épületszerkezettan I-IV. UNIVERSITAS, Budapest<br>• Széll László (2011): Magasépítéstan I-II. TERC Kft., Budapest<br>• Fátrai György (2008): Történeti tetőszerkezetek. TERC Kft., Budapest<br>• Bársony István (2006): Magasépítéstan I-II. TERC Kft., Budapest<br>• Christian Schittich (ed.) (2008): Building Skins. BIRKHÄUSER EDITION DETAIL, Berlin<br>• Ansgar and Benedikt Schulz (2016): Perfect Scale. BIRKHÄUSER EDITION DETAIL, Berlin<br>• Detail magazin: https://www.detail-online.com/ | | | |
| **RECOMMENDED LITERATURE -**<br>**(Construction Technology)** | • http://e-tudasbazis.ymmf.hu/ Építéstechnológia fejezeteiből a tárgyalt témákhoz kapcsolódó leckék<br>• http://e-tudasbazis.ymmf.hu/ Tóti Magda: Szervezési Táblázatok (Bp. SZIE-YMÉK. 2003.)<br>• Építőipari Termelőfolyamatok Technológiai Előírásai 1-6. kötet (ÉTK Bp., 1987)<br>• Szerényi Attila: A munkavégzés komplex feltételei (Szega Books Kft. Pécs, 2012)<br>• Kardos – Valkó: Építőipari kézikönyv (Műszaki Könyvkiadó Bp., 1973.)<br>• Dr. Széll László: Építéstechnológia I. (Tankönyvkiadó Bp., 1970.)<br>• Törvények, rendeletek (pl. az 1993. évi XCIII. törvény a munkavédelemről, a 46/1999 (VII.4) GM Építőipari Kivit. Biztonsági Szabályzat, 66/2003 EÜM a képernyő előtti munkavégzésről).<br>• Tóti Magda: A minőségi munka biztosítása. YMMF-9908. Bp. | | | |

## A FÉLÉV ÜTEMEZÉSE

| HÉT | ELŐADÁS | ELŐADÓ | GYAKORLAT PROGRAMJA | FELADAT |
|---|---|---|---|---|
| 1 | INDUSTRIAL HALL STRUCTURES 1.<br>Steel frame structure, covering structures | HA | **MGY1**: basic structural solutions with steel frame | Drawing basic solutions and details |
| 2 | INDUSTRIAL HALL STRUCTURES 2.<br>RF. Concrete frame structure, industrial floors | HA | **MGY2**: basic structural solutions with rf.concrete frame | **HW1**: optimizing the structure of industrial halls |
| 3 | INDUSTRIAL HALL STRUCTURES 3.<br>History of industrial building | HA | Choseing the most appropriate structure based on a design program, or function. | Drawing basic solutions and detail |
| 4 | CONSTRUCTION TECHNOLOGY 1.<br>workmanship of prefabricated hall structures and claddings | JSE, PP | **MGY3**: előregyártott szerkezetek építésének térbeli organizációja | **HW2**: technological film analysis |
| 5 | **TEST#1 : Industrial halls**,<br>WATERPROOFING 1.<br>Structure of flat roofs | VIZI G | Submit **HW1** | **HW3**: design and details of a flat roof |
| 6 | WATERPROOFING 2.<br>Sub structures | VIZI G | **MGY4**: waterproofing against SM és SWP | consultation (HW2, HW3) |
| 7 | WATERPROOFING 3.<br>Industrial and domestic Waterproofing in bathrooms and showers | VIZI G | | consultation (HW2, HW3) |
| 8 | CONSTRUCTION TECHNOLOGY 2.<br>workmanship of waterproofing | JSE, PP | **MGY5**: teamwork: usage and application of waterproofing | consultation (HW2, HW3) |
| 9 | | | | |
| 10 | **TEST#2 : Waterproofing**,<br>HABITABLE ATTICS | VIZI G | • Submit **HW3**<br>• **MGY6**: typical details of habitable attic | • **HW4**: roof structure of habitable attic MODEL<br>• structural detail solutions<br>• making a makett<br>• consultation of the DESIGN project (section) |
| 11 | **1. PZH**,<br>DRY BUILDING TECHNOLOGIES<br>Partition walls, Suspended ceilings, double floor | VIZI G | Submit **HW4** | consultation of the DESIGN project (section) |
| 12 | **2. PZH**,<br>CONSTRUCTION TECHNOLOGY 3.<br>Suspended ceilings, double floor | JSE, PP | Submit **HW2** | |
| 13 | **TEST#3**<br>CONSTRUCTION TECHNOLOGY 4.<br>Fixing technology<br>FISCHER | guest | fixing technology practice | |
| 14 | **3. PZH**,<br>CONSTRUCTION TECHNOLOGY 5.<br>Detail analysis | JSE, PP | detail analysis | |

| A FÉLÉV TELJESÍTÉSÉNEK KÖVETELMÉNYEI | | | |
|---|---|---|---|
| **ÉVKÖZI FELADATOK ÉS SZÁMONKÉRÉS** | | | |
| **REQUIREMENT** | **DESCRIPTION** | **TO SUBMIT** | **VALUE** |
| **REQUIREMENTS FOR PARTICIPATION IN OCCUPATIONS** | The lectures and lessons can be missed maximum three times, and the requirements of the University Study and Examination Regulations and the Faculty Supplement apply to the subject requirements. (especially ETVSZ 46. §) | | - |
| **ABSENCE JUSTIFICATION FROM LECTURES AND LESSONS** | Absence is considered to be justified with a medical certificate. | | - |
| **MGY1** | Skeleton of industrial halls | M=1:100 structural floorplan and section (2-2 pcs) | **1,5 pont** (min. 0,5 pont) |
| **MGY2** | Steal and RF concrete structure | M=1:10 2-2 pcs detail | **1,5 pont** (min. 0,5 pont) |
| **MGY3** | Building site Organization of prefabricated structures | M=1:500 organization plan | **2 pont** (min. 0,5 pont) |
| **MGY4** | Insulating against SM és SWP structural variations | M=1:10 2-2 pcs detail | **1,5 pont** (min.0,5 pont) |
| **MGY5** | Application of waterproofing | pdf document | **1,5 pont** (min. 0,5 pont) |
| **MGY6** | Details of habitable attics | M=1:10 2-2 pcs detail | **2 pont** (min. 0,5 pont) |
| **HF1** | optimizing the structure of industrial halls | M=1:20 wall section<br>M=1:10 4 pcs detail,<br>list of components | **10 pont** (min. 5 pont) |
| **HF2** | Construction Technological film analysis | pdf document | **10 pont** (min. 5 pont) |
| **HF3** | Waterproofing against rainwater – system optimalization | M=1:10 4 pcs detail,<br>list of components | **15 pont** (min. 8 pont) |
| **HF4** | structure of habitable attic MODEL | M=1:10 detail makett | **5 pont** (min. 3 pont) |
| **BUILDING DESIGN PART** | execution plan section of the DESIGN project, with layer sequences, dimensions, explanatory texts | M=1:50 execution plan on the equivalent size of paper as in theT4 building design project | **5 pont** (min. 3 pont) |
| **TESTS** | The goal of the TWO TESTs is to check the general knowledge acquired from the subject. In the test we will basically require drawings worthy of an engineer with explanatory text. You should acquire 60% in the test to pass it.. | | 3x45 pont (min. 3x23 pont)/3 = **45 pont** (min. 23 pont) |
| **MID TERM TASKS TOTAL:** | | | **100 pont** (min. 50 pont) |
| **EXAM** | The goal of the TWO TESTs is to check the general knowledge acquired from the subject Like in the tests, there will be tasks where you have to draw, and questions where you have to give written answer. | | **100 pont** (min. 50 pont) |
| **SEMESTER TOTAL:** | | | **200 pont** |

**SUBJECT CONTENT, DESCRIPTION OF TASKS:**

Students take part in lectures and exercises (structural design studio) during the semester. To complete the semester, they solve tasks related to architectural representation, building structure and construction technology together, and they have to solve individual drawing tasks.

**MGY1** – BASIC SKELETON OF INDUSTRIAL HALLS

Following the instructions of the group leader, the students draw the structural floor plan and the section of a hall with a large-span steel and reinforced concrete support structure, the aim of which is to acquaint and practice the design of special building structures in buildings containing large spaces.

- *Formal requirements:* work on a pre-downloaded worksheet from the e-learning site, with a ruler and pencil
- *Submission*: signed by the instructor at the end of the lesson the document must be uploaded to the e-learning in pdf format until the next practice,

**MGY2** - BASIC STRUCTURE OF INDUSTRIAL HALLS

Students will follow the instructions of the group leader to practice the design of a steel hall frame and its lightweight enclosing structures.

- *Formal requirements:* work on a pre-downloaded worksheet from the e-learning site, with a ruler and pencil
- *Submission*: signed by the instructor at the end of the lesson the document must be uploaded to the e-learning in pdf format until the next practice

**MGY3** - BUILDING SITE ORGANIZATION OF PREFABRICATED STRUCTURES

Students work in groups to prepare an organizational plan for the structural assembly of a prefabricated building.

- *Formal requirements:* work on the published sheet with colored pencils and needle pen.
- *Submission:* end of class

**MGY4** - INSULATING AGAINST SM ÉS SWP STRUCTURAL VARIATIONS

Following the guidance of the group leader, students practice the structural design rules of substructure insulation modes by solving pre-edited node sheets.

- *Formal requirements:* work on a pre-downloaded worksheet from the e-learning site, with a ruler and pencil
- *Submission*: signed by the instructor at the end of the lesson the document must be uploaded to the e-learning in pdf format until the next practice

**MGY5** - APPLICATION OF WATERPROOFING

Students study different manufacturer specifications in a group work and then choose solutions to insulate individual points in a given building and justify their choice.

**MGY6** - HABITABLE ATTICS

Under the guidance of the group leader, the students draw detail drawings of two typical attic installation solutions, practicing the rules for the design of attic installations, learning about the important differences between the solutions installed afterwards and those designed for attic installation.

- *Formal requirements:* work on a pre-downloaded worksheet from the e-learning site, with a ruler and pencil
- *Submission*: signed by the instructor at the end of the lesson the document must be uploaded to the e-learning in pdf format until the next practice

**HF1** - OPTIMIZING THE STRUCTURE OF INDUSTRIAL HALLS

Students look for the most optimal structural design based on a given design program or function in the framework of group work. They make a wall section according to the chosen structural system in a M = 1: 20 scale and choose products and components, and details are made based on the wall section in a scale of M = 1:10.

The functions of the hall for which the structural design must be solved may be as follows:

  - unheated machine warehouse,
  - unheated crop warehouse,
  - • Heated dry goods warehouse with sandwich panel cover
  - • heated dry goods warehouse with façade cladding.
- *Formal requirements:* wall section on an A3 drawing sheet at M = 1: 20 scale, edited with a ruler, details on A3 drawing sheets, also edited with a ruler.
- *Submission*: According to schedule. The condition of the submission is the prior approval signature of the teacher on the drawing.

**HF2** - CONSTRUCTION TECHNOLOGICAL FILM ANALYSIS (according to a separate job description)

**HF3** - WATERPROOFING AGAINST RAINWATER – SYSTEM OPTIMALIZATION

Students look for the most optimal structural design based on a given design program or function in the framework of group work. They make a wall section according to the chosen structural system in a M = 1: 20 scale and choose products and components, and details are made based on the wall section in a scale of M = 1:10.

- *Formal requirements: wall section on an A3 drawing sheet at M = 1: 20 scale, edited with a ruler, details on A3 drawing sheets, also edited with a ruler.*
- *Submission: According to schedule. The condition of the submission is the prior approval signature of the teacher on the drawing.*

**HF4: TETŐTÉRBEÉPÍTÉS SZERKEZETE MAKETT**

In groups of two, students prepare a model of the structural solution designated by the group leader based on what they have previously learned and discussed. The model must show the structure of the sloping roof in such a way that all the essential elements are visible. The width and length of the roof section must be 14 cm. Its connection with the purlin and the jamb wall is optional. The requirement for the model is to be able to stand when placed on a table according to the angle of inclination of the roof.

- *Formal requirements*: not disintegrating, understandable*, typically made of wood* with additional foils and materials
- *Submission*: next class present the model, document (min. 2 pcs photo) uploaded to the e-learning

| FÉLÉVZÁRÁS KÖVETELMÉNYEI | | | | | |
|---|---|---|---|---|---|
| **VERIFICATION EVALUATION** | The condition for completing the course is participation in accordance with the requirements of the University Study and Examination Regulations, obtaining a signature and passing the examination. Assessment is based on **active** participation in the subject and class activity, as well as on completion of mid-term assignments and the exam. | | | | |
| **CONDITIONS FOR OBTAINING A SIGNATURE** | The practical work of the semester is considered completed if the student :<br>• participated in the classes according to the above requirements (ETVSZ)<br>• submitted all drawing assignments and workshop practices, they are individually at least sufficient, and the three TESTs each are at least sufficient.<br><br>If any of the above is not met, the semester will be denied. | | | | |
| **SEMESTER GRADE** | 0-50 pont | 51-70 | 71-80 | 81-90 | 91-100 |
| | 1 - FAIL | 2 - PASS | 3 - SATISFACTORY | 4 - GOOD | 5 - EXCELLENT |
| **CONDITIONS FOR OBTAINING AN OFFERED GRADE** | Minimum 80 % gained from each of the tasks, and tests No offer grade in case of online education. | | | | |
| SIGNATURE RETAKE EXAM | One out of the three tests can be retaken in the signature retake exam, if the test and the corrective test was both unsuccessful. If neither the test and nor the corrective test was written (min 20% of the total points) the test can't be retaken in the signature retake exam. The signature retake exam will be from the whole material of the semester.<br>OR<br>The building design part can be re-submitted if the other homework were submitted during the semester and the points gained for those reaches the minimum requirement. In case of submitting with signature retake, the maximum point will be equal with the minimum point.<br>SO<br>One of the tests OR the building design part can be done with signature retake exam, not both! | | | | |
| **CONDITIONS FOR ADMISSION TO THE EXAM** | During the exam period, the student will take the exam on one of the exam days announced in Neptune.<br>Only those students can take the exam who:<br>• obtained the signature, and<br>• have applied for one of the examinations scheduled in Neptune.<br><br>The exam lasts approximately 120 minutes and consists of several tasks with a total value of 100 points in written or written and oral form. | | | | |
| **EXAM GRADE** | 0-50 pont | 51-70 | 71-80 | 81-90 | 91-100 |
| | 1 - FAIL | 2 - PASS | 3 - SATISFACTORY | 4 - GOOD | 5 - EXCELLENT |
| | | | | | |
| **FINAL GRADE** | 0-100 pont | 101-141 pont | 142-161 pont | 162-181 pont | 182-200 pont |
| | 1- FAIL | 2 - PASS | 3 - SATISFACTORY | 4 - GOOD | 5 - EXCELLENT |