

# TOROS ÜNİVERSİTESİ

Faculty Of Fine Arts, Design And Architecture  
Architecture

## Course Information

### STRUCTURE II

| Code   | Semester | Theoretical<br>Hour / Week | Practice | National Credit | ECTS Credit |
|--------|----------|----------------------------|----------|-----------------|-------------|
| ARC238 | Spring   | 2                          | 0        | 2               | 2           |

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Prerequisites and co-requisites</b>      | STRUCTURE I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Language of instruction</b>              | Turkish                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Type</b>                                 | Required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Level of Course</b>                      | Bachelor's                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Lecturer</b>                             | Prof. Dr. Necati ŞEN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Mode of Delivery</b>                     | Face to Face                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Suggested Subject</b>                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Professional practise ( internship )</b> | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Objectives of the Course</b>             | Makes architectural students to gain ability of understand changes in existing buildings with the frame of basic content and structural design principles.It contributes developing creative ideas during 3d , spatial design process of design project of by understanding contents,abilities and extends of structure basicly.In addition by analyses of successful buildings about structure systems provides students to gain ability of making synthesis and analysis.For students, this course will provide a positive method, by which he/she may rapidly acquire comprehensive and competent knowledge on all structures, comprehensive order of structures. Gaining ability of form analyses and making 3d models, students will design applications by investigating different spatial formal structural systems. Course also increases creativity of students during design projects period, solving 3d spatial structural systems. |
| <b>Contents of the Course</b>               | In the content of cours ,weekly lectures will explained to students by power point presentaions visually.It is expected from students to make and design models and about given subjects on time.Models that are especially given for developing skills on 3d design,must be studied and developed by students.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## Learning Outcomes of Course

| # | Learning Outcomes                                                     |
|---|-----------------------------------------------------------------------|
| 1 | Introducing meaning at structure and architecture                     |
| 2 | Learning artificial and natural structures                            |
| 3 | Learning how to use various structural systems in designs             |
| 4 | Learning various properties and classifications of structural systems |
| 5 | Producing various structural systems for solving a design project     |

## Course Syllabus

| # | Subjects                                                                                                                                                                                                                   | Teaching Methods and Technics |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 1 | 1.Introduction to the course,2.General repetition of last semester course contents,3.Introduction of new content: Vector Active Structure Systems.                                                                         | Lecture                       |
| 2 | "1.Continuing to Vector-active Structure systems -Definition / Synopsis / Spans -Flat Trusses -Transmitted Flat Trusses -Curved Trusses -Space Trusses "                                                                   | Lecture                       |
| 3 | "1.Introducing Section active Structure Systems subject -Definition / Synopsis / Operations -Deformation and Stabilization -Systems of Vertical Load Transfer -Examples of Typical Structure Forms -Elevation Geometries " |                               |

|    |                                                                                                                                                                                                                    |         |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 4  | "1.Introducing Surface Active Structure systems. -Definition / Synopsis / Spans -Plate Structures -Folded Plate Structures -Shell Structures *Cylindrical Shells *Dome Shells *Saddle Shells "                     | Lecture |
| 5  | 1.Surface Active Structure Systems continues                                                                                                                                                                       | Lecture |
| 6  | Surface Active Structure Systems continuing                                                                                                                                                                        | Lecture |
| 7  | "1.Introducing Height-Active Structure Systems -Definition / Synopsis / Operations -Deformation and Stabilization - Systems of Vertical Load Transfer -Examples of Typical Structure Forms -Elevation Geometries " | Lecture |
| 8  | MIDTERM EXAM                                                                                                                                                                                                       |         |
| 9  | 1.Height-Active Structure Systems continues                                                                                                                                                                        | Lecture |
| 10 | Exteriors, facade construction technics and designs                                                                                                                                                                | Lecture |
| 11 | Critics for models                                                                                                                                                                                                 | Lecture |
| 12 | 1.Hybrid Structure Systems: -Definition / Potential, -Superposition Systems, -Coupling Systems , -Combined Hybrid Systems                                                                                          | Lecture |
| 13 | Hybrid Structure Systems continues                                                                                                                                                                                 | Lecture |
| 14 | "1.Introducing Geometry Structure &Form -Significance / function -Geometry and Force Image -Flat surfaces / Foldings -Singly Curved Surfaces -Dome Surfaces -Saddle Surfaces "                                     | Lecture |
| 15 | Geometry Structure and Form continues                                                                                                                                                                              | Lecture |
| 16 | Final Exam                                                                                                                                                                                                         |         |

## Course Syllabus

| # | Material / Resources                             | Information About Resources | Reference / Recommended Resources |
|---|--------------------------------------------------|-----------------------------|-----------------------------------|
| 1 | Gerçek C., 'Yapıda Taşıyıcı Sistemler'           |                             |                                   |
| 2 | Ching F. D.K., ' Çizimlerle Bina Yapım Rehberi ' |                             |                                   |
| 3 | Engel H., 'Structure Systems'                    |                             |                                   |

## Method of Assessment

| # | Weight | Work Type     | Work Title    |
|---|--------|---------------|---------------|
| 1 | 40%    | Mid-Term Exam | Mid-Term Exam |
| 2 | 60%    | Final Exam    | Final Exam    |

## Relationship between Learning Outcomes of Course and Program Outcomes

| # | Learning Outcomes                                                     | Program Outcomes | Method of Assessment |
|---|-----------------------------------------------------------------------|------------------|----------------------|
| 1 | Introducing meaning at structure and architecture                     | 3,10             | 1,2                  |
| 2 | Learning artificial and natural structures                            | 1,3,18           | 1,2                  |
| 3 | Learning how to use various structural systems in designs             | 10               | 1,2                  |
| 4 | Learning various properties and classifications of structural systems | 10,18            | 1,2                  |
| 5 | Producing various structural systems for solving a design project     | 10               | 1,2                  |

PS. The numbers, which are shown in the column Method of Assessment, presents the methods shown in the previous table, titled as Method of Assessment.

## Work Load Details

| # | Type of Work                                                  | Quantity | Time (Hour) | Work Load |
|---|---------------------------------------------------------------|----------|-------------|-----------|
| 1 | Course Duration                                               | 14       | 2           | 28        |
| 2 | Course Duration Except Class (Preliminary Study, Enhancement) | 14       | 1           | 14        |
| 3 | Presentation and Seminar Preparation                          | 0        | 0           | 0         |
| 4 | Web Research, Library and Archival Work                       | 0        | 0           | 0         |

|    |                              |   |   |           |
|----|------------------------------|---|---|-----------|
| 5  | Document/Information Listing | 0 | 0 | 0         |
| 6  | Workshop                     | 0 | 0 | 0         |
| 7  | Preparation for Midterm Exam | 0 | 0 | 0         |
| 8  | Midterm Exam                 | 1 | 1 | 1         |
| 9  | Quiz                         | 0 | 0 | 0         |
| 10 | Homework                     | 4 | 4 | 16        |
| 11 | Midterm Project              | 0 | 0 | 0         |
| 12 | Midterm Exercise             | 0 | 0 | 0         |
| 13 | Final Project                | 0 | 0 | 0         |
| 14 | Final Exercise               | 0 | 0 | 0         |
| 15 | Preparation for Final Exam   | 0 | 0 | 0         |
| 16 | Final Exam                   | 1 | 1 | 1         |
|    |                              |   |   | <b>60</b> |