



Course Plan:

Structure 2

Teacher: Dr. BROUTHEN Abdelaziz

2022/2023

1. Course information

Module: Structure 2

Teacher: Dr. BROUTHEN Abdelaziz

Faculty: Sciences & Technology

Department: Architecture

Targeted public: 3rd year Bachelor Architecture

Teaching unit: Transversal

Code: UET5

Credit: 02

Coefficient: 02

Duration: 15 weeks

Timetable:

| | |
|--------------------|--------------------------|
| Tuesday (remotely) | 13h10 to 14h40: Lecture |
| | 14h50 to 16h20: TD (G01) |
| | 16h30 to 18h00: TD (G02) |

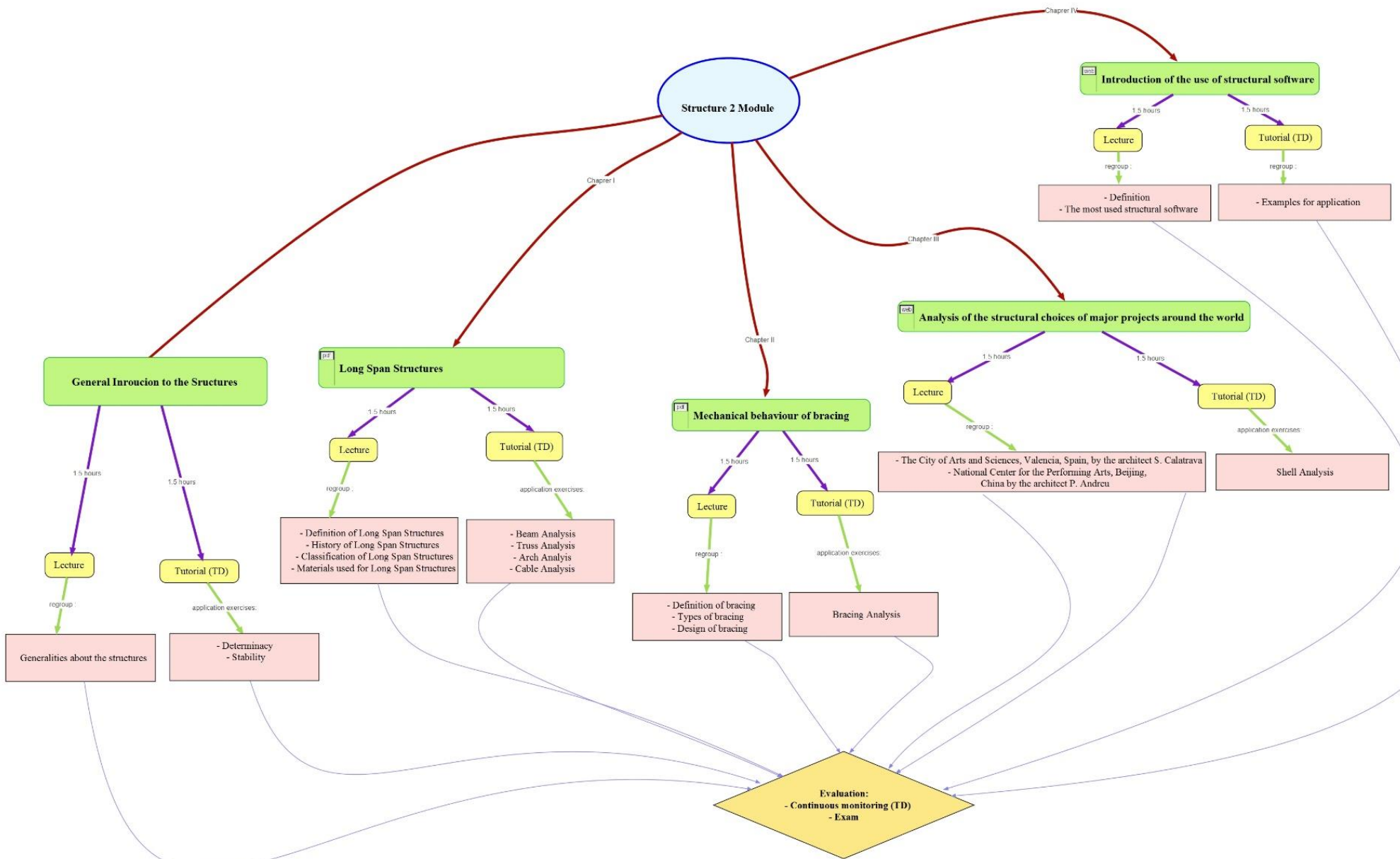
Contact: by email at brouthen.abdelaziz@gmail.com or abdelaziz.brouthen@univ-biskra.dz

Availability:

In the laboratory: Sunday, Wednesday, Thursday.

2. Course presentation

This course is intended to provide the student with a clear and thorough presentation of analysis and understanding of the structure choice importance in the design of the architectural project.



Concept map of structure 2 module

3. Content

General Introduction to the Structure

Chapter I: Long-Span Structures

Chapter II: Mechanical behavior of bracing

Chapter III: Analysis of the structural choices of major projects around the world (i.e., Calatrava, Andreu...etc.)

Chapter IV: Introduction to the use of structural software

Tutorials (TD) are associated with each of the learning units covered in the course. As a result, we also have four learning units, each of which is designed to reinforce the concepts covered in the course, through learning activities in which these concepts are put into practice.

| TD N° | Content |
|-------|--|
| TD 0 | Determinacy Stability |
| TD 1 | Beam Analysis Truss Analysis Arch Analysis Cable Analysis |
| TD 2 | Bracing Analysis |
| TD 3 | Shell Analysis |
| TD 4 | Examples for application (structural software) |

All learning units (**Lecture** and **TD**) are done through the e-learning platform (Moodle) of Biskra universisty (<http://elearning.univ-biskra.dz/moodle/>) by watching videos or lectures/TD online via Google meet. In addition to lessons for each chapter in PDF and SCORM formats, and consist

Lecture/TD reviews: briefly present the essentials of the lecture/TD (definitions, types, methods, laws, etc.) with illustrative examples, videos...etc.

Self-assessment activities: these consist of exercises (QCM, QCU, the matching format, fill in the blanks...etc.) designed to check that the student has retained the concepts of the chapter in question.

A learning activity: dedicated to the TD series including writing exercises.

4. Prerequisites

To ensure that the tutorials (TD) run smoothly, you need to know:

- ✓ Notions of SOM (Strength of Materials)
- ✓ Some mathematical concepts.
- ✓ Simple notions of physics.

To test these prerequisites, a prerequisite test is assigned to each learning unit followed by redirection resources in the event of failure.

5. Learning objectives:

This module covers the subject of building structures. At the end of this module, you will be able to:

- ✓ **In terms of knowledge:**

Understanding the unique properties of long-span structures, lateral force resisting mechanisms (bracings), some structural software, some basic types of structures, their components, supports and various types of loads, some preliminary aspects of structural analysis (Determinacy & Stability).

- ✓ **In terms of know-how:**

Analysis of structural systems (such as: beams, trusses, arches, cables, and shells..etc) by getting the internal loadings and their diagrams.

✓ **In terms of interpersonal skills:**

Design of different structural systems.

6. Evaluation mode of learning:

The aim of learning assessment is to verify the knowledge acquired. Continuous assessment accounts for **40%** of the final mark:

- **20%** of the mark for the Quizzes and matching tests
- **12%** of the mark for the numerical exercises
- **8%** of the marks awarded for participation at online sessions and presentations.

At the end of the semester, a written exam is taken which accounts for **60%** of the final grade.

The final mark required to pass this module must be at least **10.00**.

7. Resources

Francis, D K C. Onouye, B. Zuberbuhle, D. 2014. Building Structures Illustrated. Second Edition, John Wiley & Sons, New Jersey.

Francis, D K C. 2008. Building Structures Illustrated. Forth Edition, John Wiley & Sons, New Jersey.

Hibbeler, R C. 2012. Structural Analysis. Eighth Edition, Pearson Prentice Hall, New Jersey.