

Special Structures:

Calendar: 2nd Year 2nd Semester

Contact Hours: 15T +30h00 T/P + 7h30 OT

Syllabus:

INTRODUCTION: Structural systems. Construction processes. Conditioning.

ACTIONS: Specific action for road and railway bridges. Concrete shrinkage and creep.

BRIDGE DECK DESIGN: Transversal analysis. Longitudinal analysis. Prestress.

PIERS: Transversal analysis. Longitudinal analysis. Second order effects.

ABUTMENTS: Apperent and embedded abutments. General design.

BEARINGS AND EXPANSION JOINTS: Design criteria.

Intended learning outcomes of the curricular unit:

By the end of this course the student will be able to design bridges and viaducts with small and medium spanes (up to 40m).

Demonstration of the syllabus coherence with the curricular unit's intended learning outcomes:

The first chapter aims at defining the scope of the course, showing some specific problems of bridge design.

The second chapter shows students specific actions of road and railway bridges.

With the programmatic content of other chapters the students acquire the ability to design th relevant structural elements of cast in place bridges.

Teaching methodologies (including evaluation):

In the lecture classes, the course concepts are taught and illustrative examples are shown. The application of these subjects, by means of practical problems or a group work developed by the students, takes place in the practical classes, with the proper monitoring.

Evaluation: group work (TG) and final exam (E).

The group work has two parts. The written work (TGE) and an oral test (TGO).

Each group has a maximum of 4 students.

Minimum score of the group work (TG) is 10.0 val (of 20 val.)

Minimum score of the final exam (E) is 8.0 val (of 20 val.)

Group work grade (TG) is given by:

$$TG = 0.50 \times TGE + 0.50 \times TGO$$

The final grade is obtained as follows:

$$0.50 \times TG + 0.50 \times E$$

Passing requires a final grade not less than 9.5/20 points.

Final grades above 16/20 points must be sustained through an oral examination.

Demonstration of the teaching methodologies coherence with the curricular unit's intended learning outcomes:

The teaching methods include lecture classes, based on a expository technique in the classroom with the aim of transfer concepts, definitions and mechanisms of interpretation of the problems. With the theoretical lessons it is intended to provide students the knowledge to the pursuit of the course objectives.

The teaching methods also include practical classes that follow a strategy to solve problems or a group work, individually or in groups of students, with the monitoring of the teacher. With the practical classes it is intended that the student acquires the competence to understand, describe and relate the knowledge.

The system of evaluation allows assessing if the skill of knowledge integration was attained.