

IDENTIFICATION

Course code : ESI-SPI-CI-BE4-S8-UE3-EC3
ECTS : 1.5

DURATION

Lectures :	4
Tutorial classes :	4
Labs :	0
Total :	8

Project :
Personnal work :

ASSESSMENT

Continuous assessment : Completion of a full functional analysis (Octopus + FAST) on a construction element or a specific energy system.

TEACHING MATERIALS

Lectures, tutorials and case studies

LANGUAGE

English

CONTACT

Modifié le : 3 août 2026

UE : UE8-EFFI

COURSE : Functional analysis applied to the construction process

SCOPE OF THE COURSE

OBJECTIVES

Defining needs : Learning to translate a project owner's expectations into functions and technical constraints. Mastering AF tools : Using standardized diagrams to structure thinking (Horned Beast, Octopus, FAST). Applying AF to the building life cycle : Understanding the interaction between the structure and its environment (climatic, regulatory, human). Optimizing design : Using value analysis to eliminate unnecessary or overly costly functions.

COMPETENCE AND SKILLS

Developing a Functional Specification Document (FSD) : Listing the service functions (main and constraint) of a building subsystem (e.g., a façade, a ventilation system). Prioritizing needs : Balancing energy performance, construction cost and user comfort. Justifying technical choices : Being able to explain why a solution was selected based on the services provided.

PROGRAM

Session 1 : Fundamentals and External Analysis (4h) Needs and the object : Introduction to Functional Analysis of Needs (FAN). The Horned Beast diagram : To whom does the structure provide a service? On what does it act? The Octopus diagram : Identifying relationships between the structure and its external environment (tropical climate, energy, maintenance, users, standards). Writing the FSD : Characterizing functions (criteria, levels, flexibility).

Session 2 : Internal Analysis and Case Study (4h) The FAST diagram (Functional Analysis System Technique) : Moving from "Why" to "How" (Translating a function into a technical solution). Value Analysis : Relationship between the cost of a function and its importance to the user. Tutorial application : Functional analysis of a system specific to Réunion Island (e.g., an adjustable sunshade or an energy storage system for an isolated site).

BIBLIOGRAPHY

REQUIREMENTS

None