FSAB1209 Advanced Statics

[15h+10h exercises] 2 credits

This course is taught in the 1st semester

Teacher(s): David Johnson (coord.), Jean-Claude Samin
Language: French
Level: First cycle

Aims

At the outcome of this course, students are expected to :
- know about the various types of external and internal joints and supports, as well as the related degrees of freedom
- understand the meaning of total and partial isostaticity and hyperstaticity
- be able to apply virtual work principles in solving problems of statics
- be able to determine internal loads and stresses and strains in a beam, as well as the resulting sizing of the beam

Main themes

Equilibrium of systems of rigid bodies
Internal loads
Stresses and strains
Principle of virtual work, as applied to static systems.
Application of the above to the specific case of loaded beams and trusses

Content and teaching methods

- Graphical methods in statics
- Trusses
- Internal loads in loaded rigid bodies
- Traction and compression : stresses and strains
- Bending : stresses and strains
- Torsion : stresses and strains
- Loaded beams : strength and deformation sizing
- Principle of virtual work applied to static systems.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisites :
FSAB 1201 (Physics 1) or an equivalent course
FSAB 1202 (Physics 2) or an equivalent course
FSAB 1203-A (Physics 3) or an equivalent course
FSAB 1101 (Mathematics 1) or an equivalent course
FSAB 1102 (Mathématiqcs 2) or an equivalent course
Assessment :
Written examination, centred on problem solving.
References :
Instructors' course notes

Other credits in programs

ARCH12BA	Deuxième année de bachelier en sciences de l'ingénieur, orientation ingénieur civil architecte	(2 credits)	Mandatory