

Faculty of Biological, Agronomic and Environmental Engineering

BRES2107 Material resistance

[30h+30h exercises] 5 credits

This course is taught in the 1st semester

Teacher(s): David Johnson, Benoît Raucent, Jean-François Thimus
Language: French
Level: Second cycle

Aims

At the end of the course, the student must be able :

- to understand the theories describing the behaviour of materials submitted to mechanical constraints ;
- to select the most appropriate materials for a given application; and
- to apply the theory to calculate pieces of machines such as used in the construction of mechanical systems for power transmission and for the control of hydraulic structures.

Main themes

- a) Principle of resistance of materials : constraints in the materials, traction, compression, flexion
- b) Calculation methods for static and dynamic analysis of machines
- c) Materials used in machine construction
- d) Calculation of machine pieces
- e) Elements of machinery
- f) Application of numerical methods for machine design
- g) Exercices
 - Computer room exercices on the design of machine pieces
 - Material tests in the laboratory
 - Computer aided design

Other credits in programs

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| BIR22/7A | Deuxième année du programme conduisant au grade de bio-ingénieur : Sciences agronomiques (Ressources en eau et en sol) | (5 credits) |
| BIR22/7E | Deuxième année du programme conduisant au grade de bio-ingénieur : Sciences et technologie de l'environnement (Ressources en eau et en sol) | (5 credits) |