



Open course "Contact Mechanics and Elements of Tribology"

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February 24-28, 2025

Hybrid mode: @Centre des matériaux, Evry and in Zoom

Monday, February 24

- 9h00 – 10h30 Lecture: Mechanical Contact I
- 10h45 – 12h15 Practice: Integration of Flamant solution
- 13h30 - 15h00 Lecture: Mechanical Contact II
- 15h15 – 16h45 Practice: Study a stress field induced by a frictional sliding

Tuesday, February 25

- 9h00 – 10h30 Lecture: Contact and Mechanics of Materials
- 10h45 – 12h15 Practice: Inelastic deformation in contact
- 13h30 - 15h00 Lecture: Surface roughness and contact of rough surfaces
- 15h15 – 16h45 Practice: Characterisation of rough contact

Wednesday, February 26

- 9h00 – 10h30 Lecture: Fretting and Wear (H. Proudhon)
- 10h45 – 12h15 Practice: Solving fretting problem using Flamant solution
- 13h30 - 15h00 Lecture: Computational contact mechanics: Finite Element Method
- 15h15 – 16h45 Practice: Coding your contact element in a toy-FEM code

Thursday, February 27

- 9h00 – 10h30 Lecture: Computational contact mechanics: Boundary Element Method
- 10h45 – 12h15 Practice: Solving rough contact problem in Tamaas code
- 13h30 - 15h00 Lecture: Lubrication and sealing
- 15h15 – 16h45 Practice: Solving Reynolds equation with finite difference method

Friday, February 28

- 9h00 – 9h50 Nanoscale Wear (R. Aghababaei, Aarhus University)
- 9h50 - 10h40 Tribology of Tyres (Michelin)
- 11h00 – 11h40 Contact at Safran Aircraft Engines (Safran)
- 11h40 – 12h30 Fretting & Wear (P. Arnaud, MINES Paris - PSL)
- 13h45 - 16h30 Online written exam
- 16h30 - 16h40 Conclusion & farewell