

Open course "Contact Mechanics and Elements of Tribology"

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February 24-28, 2025

Hybrid mode: @Centre des matériaux, Evry, France 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
- 15h15 – 16h45 **Practice:** Characterisation of rough contact



Wednesday, February 26

- 9h00 – 10h30 **Lecture:** Mechanics of Rough Contact
- 10h45 – 12h15 **Practice:** Solving rough contact problem in Tamaas code
- 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:** Fretting and Wear (S. Fouvry)
- 10h45 – 12h15 **Practice:** Solving fretting problem using Flamant solution
- 13h30 - 15h00 **Lecture:** Lubrication and sealing
- 15h15 – 16h45 **Practice:** Solving Reynolds equation with the finite difference method

Friday, February 28

- 9h00 – 9h40 **David Kammer** et al "Eulerian-based contact in FEM" (ETH Zürich)
- 9h40 - 10h30 **Eric Berger** "Tribology of Tyres" (Michelin) 
- 11h00 – 11h40 **Karim Demmou** "Contact, Friction, Wear in Aerospace (Safran) 
- 11h40 – 12h30 **Pierre Arnaud** "3rd body in Wear" (Mines Paris)
- 13h45 - 16h30 Online written exam
- 16h30 - 16h40 Conclusion & farewell