

BIEN 514. FUNDAMENTALS AND RHEOLOGY OF BIOLOGICAL FLUIDS.

Credits: 3

Offered by: Bioengineering (Faculty of Engineering)

Terms offered: Winter 2026

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Description

Fundamentals of non-Newtonian fluid mechanics and rheology as applied to biological fluids. Fundamentals of mass and momentum conservation, dimensional analysis, continuity equations, Generalized Newtonian Fluid models, and the solution of fluid flow problems using empirical constitutive relationships. Selected topics in polymer physics relevant to biological fluids. Fundamentals of rheological characterization, both macrorheology and microrheology. Application of these concepts to the rheology of selected biological fluids in health and disease, selected applications of biofluid rheology: drug delivery, biofluid / pathogen interactions, and aerosol disease transmission.

- Prerequisite(s): MATH 262 and BIEN 314, or permission of the instructor
- Restrictions: Not open to students who have taken BIEN 414.
- 3-1-5

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