

**UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF CHEMISTRY
COURSE SYLLABUS
FALL 2019**

1. Course: CHEMISTRY 571, Physical Chemistry of Interfaces

LEC	DAYS	TIME	ROOM	PROFESSOR	OFFICE	EMAIL	OFFICE HOURS
L01	TR	12:30-1:45	TRB101	Dr. V. Birss	ES 656	birss@ucalgary.ca	TBA

To avoid IT problems, it is recommended that students use their U of C account for all course correspondence. Please use "CHEM 571 inquiry" as the Subject of your e-mail.

Desire 2 Learn (D2L): CHEM 571 L01 - (Winter 2017) – Physical Chemistry of Interfaces
<https://d2l.ucalgary.ca/d2l/home/171384>

Departmental Office: Room SA 229, Tel: (403) 220-5341, e-mail: uginfo@chem.ucalgary.ca

- 2. Course Description: Lectures:** Surface energy and Interfacial energy; contact angles, capillary rise; measuring surface tension; thermodynamics of interfaces. Solid/gas interfaces; adsorption on solids; adsorption isotherms; single crystals; surface analysis methods. Solid/liquid interfaces; double layers; electrochemistry of interfaces.
- 3. Backup Textbook:** *'Physics & Chemistry of Interfaces'; Hans-Jurgen Butt, Karlheinz Graf, and Michael Kappl, Wiley-VCH (2nd edition). (This book is available in the library and will also be available in the University Bookstore. It is recommended only as a backup and is not required).*

4. Topics Covered:

- Introduction to surface energy & interfacial tension
- Thermodynamics of interfaces and surface tension
- Liquid/gas interfaces: curvature of droplets, capillarity
- Solid Surfaces – structure, crystallinity, single crystals
- Solid surface characterization techniques, including high vacuum methods
- Solid/gas interfaces – adsorption, adsorption isotherms, surface catalysis
- Solid/liquid interfaces – double layers, electrical aspects of colloid chemistry, introduction to electrode/solution electrochemistry

5. Laboratory Experiments: (N/A)

Department Approval _____ Electronically Approved _____ Date _____ Sept 3, 2019 _____