

# Surfaces and biosensing



**ECTS**  
3 crédits



**Etablissement(s)**  
UFR Chimie,  
UFR des  
Sciences  
fondamentales  
et biomédicales



**Volume horaire**  
24h



**Période de  
l'année**  
Semestre 2

## En bref

- **Langue(s) d'enseignement:** English
- **Forme d'enseignement :** Cours magistral
- **Ouvert aux étudiants en échange:** Non

## Présentation

### DESCRIPTION

This teaching addresses the topics of biosensing and biomolecular diagnostics. The main challenge in biosensing and biomolecular diagnostic is to selectively reveal the reaction of the targeted molecule with a sensing unit (an immunoreaction, a DNA hybridization, an enzyme/substrate reaction...) and then translate it into an appropriate readout (electrical signal, optical signal ...). This can either involve homogenous (bio)-chemical reactions or more complex interfacial chemistry. This course will describe how the choice of sensing bioreceptor and transduction mode impact the analytical performances. The physico-chemical concept of surface chemistry, methods of surface modifications and their application for biosensing will be addressed. This course will also allow students to better understand the influence of thermodynamic and kinetic parameters of the surface biorecognition on the analytical performances of biosensors and immunoassays.

The course will be divided in the following sequences:

- General concepts of biosensing (4 hrs CM + 2hrs TD)
- Surface modification of sensing interfaces (2 hrs CM)
- Immunoassays (4 hrs CM)
- Kinetics and thermodynamics of biomolecular recognition on surfaces (2 hrs CM + 4hrs TD)
- Cases studies (4 hrs of tutoring)
- Seminar by a professional (industrial applications, reglementation)

**Pour en savoir plus, rendez-vous sur > [u-paris.fr/choisir-sa-formation](https://u-paris.fr/choisir-sa-formation)**

## HEURES D'ENSEIGNEMENT

---

|                         |                 |     |
|-------------------------|-----------------|-----|
| Surfaces and biosensing | Cours Magistral | 14h |
| Surfaces and biosensing | Travaux Dirigés | 10h |

## PRÉ-REQUIS OBLIGATOIRES

---

Notions in structure of biomolecules

## En bref

## CONTACTS

---

### Responsable pédagogique

Benoît Piro

✉ [piro@u-paris.fr](mailto:piro@u-paris.fr)

## LIEU(X)

---

➤ Campus des Grands Moulins

**Pour en savoir plus, rendez-vous sur > [u-paris.fr/choisir-sa-formation](https://u-paris.fr/choisir-sa-formation)**