Lab methods : biosafety

Summary
The course will help students to identify and manage laboratory hazards and to run a proper risk evaluation, with a particular focus on biological and chemical activities.

Content
Identification of dangers and risk analysis
Biosafety principles
Containment
Good microbiological techniques
Safety cabinets
Decontamination, inactivation, sterilization
Working safely with chemicals
Toxicology
Viral vectors
Personal Protective Equipment (PPE)
Risk assessment of a laboratory situation

Keywords
Biosafety, chemical safety, risk, hazard.

Learning Prerequisites

Required courses
Bioengineering MA3 or Life Sciences and Technologies MA3

Learning Outcomes
By the end of the course, the student must be able to:

• Manage a safe laboratory activity
• Work out / Determine laboratory hazards (chemical, biological and physical)
• Perform a biological risk analysis
• Explain the safety principles in viral vectors
• Use safety devices and personal protective equipment (autoclave, biosafety cabinet, HEPA filter)
• Describe various inactivation and decontamination methods
• Establish an efficient waste management system
• Investigate accidents and incidents in laboratories
• Compare various inactivation and decontamination methods
• Establish an efficient waste management system
• Investigate accidents and incidents in laboratories
• Use safety devices and personal protective equipment (autoclave, biosafety cabinet, HEPA filter)
• Explain the safety principles in viral vectors
• Perform a biological risk analysis
• Work out / Determine laboratory hazards (chemical, biological and physical)
• Manage a safe laboratory activity
• Promote safety in their laboratory environment

Transversal skills
• Manage priorities.
• Respect the rules of the institution in which you are working.
• Take responsibility for environmental impacts of her/ his actions and decisions.
• Take responsibility for health and safety of self and others in a working context.
• Communicate effectively with professionals from other disciplines.
• Demonstrate the capacity for critical thinking

Teaching methods
Seminars
Demonstrations and practical work in groups of five students.

Expected student activities
Preparatory readings (journal articles, book chapters)
Participation to demonstrations and practical exercises
Writing of short lab reports

Assessment methods
During the block: evaluation of lab reports
End of the block: written control

Supervision
Office hours No
Assistants No
Forum No
Others

Course Timetable:
Tuesday 25.09.18: 13:15-17:00
Wednesday 26.09.18: 8:15-12:00 et 13:15-17:00
Thursday 27.09.18: 8:15-12:00 et 13:15-17:00
Friday 28.09.18: 8:15-12:00 et 13:15-17:00

EXAMINATION:
Date will be arranged with students according to their schedule

Resources
Bibliography

**Ressources en bibliothèque**
- Prudent practices in the laboratory : handling and management of chemical hazards / National Research Council of the National Academies
- Manuel de sécurité biologique en laboratoire / Organisation mondiale de la Santé
- Laboratory biosafety manual / World Health Organization
- Prudent practices in the laboratory : handling and management of chemical hazards / National Research Council of the National Academies

**Websites**

**Moodle Link**