

## **DIM-SAP-434 Bio-Measurements (Bio-Metrology)**

**SEMESTER:** Spring  
**CREDITS:** 3 ECTS (2 hrs. per week)  
**LANGUAGE:** English  
**DEGREES:** SAPIENS Program

### **Course overview**

This course will provide the appropriate tools to implement an equipment management system in Health Institutions as Hospital, Day Care Centers. It will go through the management strategy for biomedical equipment into a Quality System, and will also have the ability to promote scientific progress.

Concepts of safety and reliability of measurements that "lead" to an effective and accurate diagnosis and treatment will also be covered.

### **Prerequisites**

Required: Basic Excel

Recommended: Basic Statistics

Having passed a first year in any STEM degree (preferably)

## Course contents

1. Medical institutions. Strategy policies. A case.
2. Quality Assurance System for Health Institutions.
3. Medical equipment as a medical device, identification systems. Classification.
4. Manufacturers and technical services. Requirements, information needed and records to develop in the Quality System.
5. Recommended maintenance on medical equipment for a Hospital.
6. Security on medical equipment for a Hospital. International Recommendations and Standardization.
7. Protection and quality plan procedures for radiation, emission and electromagnetic equipment (TC, Scanner, Radiology ...).
8. Health Metrology: Legal Metrology, Verification and/or verification of Health Equipment, Calibration Plans. Accreditation. Certification. Homologation.
9. Quality Assurance related with biomedical equipment: records, incidences, repairing, indicators.
10. Biomedical strategy as part of the Hospital Management Policy.

### Presentation (4 hours/2 sessions):

Development of a management system for a specific biomedical equipment in a given Quality System.

### Reading Materials (freely available for students)

- VIM and GUM
- ISO Standardization
- IOML Documents

## Grading

The following conditions must be accomplished to pass the course:

- A minimum overall grade of at least 5 over 10.

The overall grade is obtained as follows:

- Test on theory, 10%.
- Daily work in solving Practical classes, 75%
- Live presentation 15%.

The retake exam will be a final Project explicitly agreed upon between the student and the Professor.

## Use of AI

The use of AI to create entire works or relevant parts, without citing the source or the tool, or without explicit permission in the assignment description, will be considered plagiarism and will be regulated in accordance with the University General Regulations.

The use of Artificial Intelligence is permitted exclusively for the completion of the daily work. Therefore, Level 2 of the Evaluation Scale by Perkins et al. (2024) is established: 'AI may be used for pre-task activities such as brainstorming, outlining, and initial research. This level focuses on using AI for planning, synthesis, and idea generation, but assessments should emphasize the ability to develop and refine these ideas independently.' That is, the student may use AI for planning, developing ideas, and conducting research, but the reports and presentations must demonstrate how these ideas have been developed and refined.