

LEARNING MODULE DESCRIPTION

GENERAL INFORMATION

1. Module title: **Detection of Anti-doping compounds**
 2. Module code: **DADC**
 3. Programme title: **Chemistry**
 4. Cycle of studies: **2nd**
 5. Year of studies: **first year**
 6. Terms in which taught (summer/winter term): **summer**
 7. Type of classes and the number of contact hours: **Lectures: 15 hrs, laboratory: 30 hrs**
 8. Number of ECTS credits: **5**
 9. Name, surname, academic degree/title of the module lecturer/other teaching staff/ e-mail:
prof. Daniel Jardines Garcia., djg_cu@yahoo.es
dr. Monika Skrobańska monika.skrobanska@amu.edu.pl
- Language of classes: **English**

DETAILED INFORMATION

1. Module aim (aims):

The fight against doping in sports has been governed since 1999 by the World Anti-Doping Agency (WADA), an independent institution behind the implementation of the World Anti-Doping Code. The intent of the Code is to protect clean athletes through the harmonization of antidoping programs at the international level with special attention to detection, deterrence, and prevention of doping.

The main goal of this course is to introduce the students different detection techniques used in antidoping.

Course objectives:

- Describe and identify antidoping compounds
- Describe main detection techniques used in antidoping chemistry
- Recognize the practical aspects and applications of antidoping techniques
- Work and communicate in a group.
- Ability to search through literature sources.

2. Pre-requisites in terms of knowledge, skills and social competences (where relevant)

Basic understand of analytical and organic chemistry is required.

READING LIST

1. Seamus P. J. Higson: *Analytical Chemistry*. Oxford University Press, 2004.
2. M. Thevis. *Mass Spectrometry in Sports Drug Testing*. John Wiley & Sons, Inc. 2010.
3. D. Thieme, , P. Hemmersbach, (Eds.). *Doping in Sports*. Springer-Verlag Berlin Heidelberg. 2010.
4. Articles in journals indicated by the lecturer.

SYLLABUS:

Lecture

Issue 1: **Gas Chromatographic methods and mass spectrometric. GC/MS**

Issue 2: **Liquid Chromatographic methods and mass spectrometric. LC/MS**

Issue 3: **Specific method. Isotope Ratio Mass Spectrometric**

Issue 4: **Biological Passport. Statistical aspect**

Issue 5: **Immunological methods. ELISA, RIA, Immuno-electrophoresis and Cytofluorometry**

Issue 6: Laboratory

Issue 7: Laboratory

Issue 8: Laboratory

Issue 9: Laboratory

Issue 10: Laboratory

STUDENT WORKLOAD (ECTS credits)

Module title:	
Activity types	Mean number of hours* spent on each activity type
Contact hours with the teacher as specified in the programme	45
Preparation for laboratory project	20
Study of the results from laboratory	15
Reading of the indicated literature	10
Writing of the reports	15
Preparation for exam	20
Total hours	125
Total ECTS credits for the module	5

* Class hours – 1 hour means 45 minutes

#Independent study – examples of activity types: (1) preparation for classes, (2) data analysis, (3) library-based work, (4) writing a class report, (5) exam preparation, etc.

GRADING SYSTEM:

5	EXCELLENT – outstanding performance	(91-100%)
4+	VERY GOOD – above the average standard with only minor errors	(81-90%)
4	GOOD – generally sound work with some minor errors	(71-80%)
3+	SATISFACTORY – fair but with a number of notable errors	(61-70%)
3	SUFFICIENT – fair but with significant shortcomings	(51-60%)
2	FAIL	below 51%