UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: TOXICOLOGY
Type: CORE COURSE
Degree: 376 - UNDERGRADUATE DEGREE PROGRAMME IN PHARMACY
Center: 14 - FACULTY OF PHARMACY
Year: 4
Main language: Spanish
Use of additional languages:
Web site:

Code: 14335
ECTS credits: 6
Academic year: 2022-23
Group(s): 10
Duration: C2
Second language: English
English Friendly: Y
Bilingual: N

Lecturer: **CARLOS ALONSO MORENO** - Group(s): **10**

Building/Office	Department	Phone number	Email	Office hours
FACULTAD DE FARMACIA	QUÍMICA INORG., ORG., Y BIOQ.	8237	carlos.amoreno@uclm.es	

Lecturer: **Mª DEL MAR ARROYO JIMENEZ** - Group(s): **10**

Building/Office	Department	Phone number	Email	Office hours
Facultad de Farmacia. Área de Anatomía.	CIENCIAS MÉDICAS	8249	mariamar.arroyo@uclm.es	

Lecturer: **ELENA CALVO LEJARRAGA** - Group(s): **10**

Building/Office	Department	Phone number	Email	Office hours
	CIENCIAS MÉDICAS		Elena.Calvo@uclm.es	

Lecturer: **FELIPE DE LA CRUZ MARTÍNEZ** - Group(s): **10**

Building/Office	Department	Phone number	Email	Office hours
FACULTAD DE FARMACIA	QUÍMICA INORG., ORG., Y BIOQ.		Felipe.Cruz@uclm.es	

Lecturer: **NOEMÍ VILLASECA GONZÁLEZ** - Group(s): **10**

Building/Office	Department	Phone number	Email	Office hours
Facultad de Farmacia	CIENCIAS MÉDICAS		Noemi.VGonzalez@uclm.es	

2. Pre-Requisites

Not established

3. Justification in the curriculum, relation to other subjects and to the profession

Not established

4. Degree competences achieved in this course

Course competences

Code	Description
B01	Proficiency in a second foreign language at level B1 of the Common European Framework of Reference for Languages.
B02	Knowledge of Information and Communication Technologies (ICT).
B03	A correct oral and written communication
B04	Ethical commitment and professional deontology.
B05	Ability to develop those learning skills necessary to undertake further studies.
EM02	Know and fully understand the basic fundamentals of clinical analysis, as well as the characteristics and contents of the laboratory diagnosis specifications
EM05	Know and understand the techniques used in the design and evaluation of pre-clinical and clinical trials.
EM07	Promote the rational use of medicines and health products.
EM11	Assess the toxicological effects of substances. Design and apply the corresponding tests and analysis.
EM13	Know and understand the structure and function of the human body, as well as the general mechanisms of disease, molecular, structural and functional alterations, syndromic expression and therapeutic tools to restore health.
EM14	Know the nature, mechanism of action and effect of the xenobiotics, as well as the protocols of action in case of poisoning
EM15	Know the analytical techniques related to laboratory diagnosis, toxic, food and environment determinations.
EM16	Know and fully understand the managements and characteristics of pharmaceutical assistance in the field of office and the pharmaceutical industry
G01	Identify, design, obtain, analyze, control and produce drugs and medicines, as well as other products and raw materials of sanitary interest for human or veterinary use.
G02	Evaluate the therapeutic and toxic effects of substances with pharmacological activity.
G03	Know how to apply the scientific method and acquire skills in the handling of legislation, sources of information, bibliography, elaboration of protocols and other aspects considered necessary for the design and critical evaluation of preclinical and clinical trials.
G04	Design, prepare, supply and dispense medicines and other products of health interest.

G05	Provide therapeutic advice in pharmacotherapy and dietotherapy, as well as in the nutritional and food field in the establishments where they provide services.
G06	Promote the rational use of medicines and medical devices, as well as to acquire basic knowledge in clinical management, health economics and the efficient use of health resources.
G07	Identify, evaluate and assess problems related to drugs and medicines, as well as participate in pharmacovigilance activities.
G08	Conducting clinical and social pharmacy activities, following the pharmaceutical care cycle.
G09	Intervene in health promotion and disease prevention activities at the individual, family and community levels, with an integral and multi-professional vision of the health-disease process.
G10	Design, apply and evaluate clinical reagents, methods and analytical techniques, knowing the basic principles of clinical analysis and the characteristics and contents of laboratory diagnostic reports.
G11	Evaluate the toxicological effects of substances and design and apply appropriate tests and trials.
G12	Develop hygienic-sanitary analyses, especially those related to food and environment.
G13	Develop communication and information skills, both oral and written, to deal with patients and users of the centre where they carry out their professional activity. Promote the capacity to work and collaborate with multidisciplinary teams and those related to other health professionals.
G14	Know the ethical and deontological principles according to the legislative, regulatory and administrative provisions governing professional practice, understanding the ethical implications of health in a changing social context.
G15	Recognise own limitations and the need to maintain and update professional competence, with particular emphasis on self-learning of new knowledge based on scientific evidence.
T01	Critical thinking skills based on the application of the scientific method
T02	Ability to manage quality scientific information, bibliography, specialized databases and resources accessible through the Internet.
T03	Handling of basic and specific software for the treatment of information and experimental results.
T04	Motivation for quality, safety at work and awareness of environmental issues, with knowledge of the internationally recognised systems for the correct management of these aspects.
T05	Organizational, planning and implementation skills.
T06	Ability to address human resources decision-making and management.
T07	Ability to work as a team and, where appropriate, exercise leadership functions, encouraging entrepreneurship.
T08	Develop interpersonal skills and the ability to function in an international and multicultural context.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

To know the basic biomarkers of toxicity.

Understand the important current challenges of toxicology in the evaluation of the safety of medicines, household products and the effects of accidental and occupational exposure to natural and synthetic substances.

To know the bases of the general etiology of the most common poisonings and the treatment.

Know and understand the fundamentals of Toxicology.

Identify the toxic effects of exposure to different toxic substances.

Identify the toxic effects derived from the consumption of drugs and drugs of abuse.

Know how to communicate results and conclusions.

Know how to determine the range of exposure that is safe and the level of exposure that can be hazardous to human health and the environment of a medicinal product or non-therapeutic chemical agent.

Know how to design protocols for toxicity testing in experimental animals to ensure the short- and long-term safety of drugs or other products before they are placed on the market.

Know how to interpret the results of in vivo and in vitro toxicity tests in the evaluation of a new medicinal product.

Know how to make an expert report on the safety of a medicinal product.

Know how to use the fundamental techniques and methods for toxicological research (sampling, laboratory diagnosis, toxics, food and environment).

Develop risk assessment to prevent and treat poisonings.

Develop the best treatments in the event of poisoning from an overdose or prolonged use of a drug or non-therapeutic agent.

6. Units / Contents

Unit 1:
Unit 2:
Unit 3:
Unit 4:
Unit 5:
Unit 6:
Unit 7:
Unit 8:
Unit 9:
Unit 10:
Unit 11:
Unit 12:
Unit 13:

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
		B01 B02 B03 B04 B05 EM02 EM05 EM07 EM11 EM13 EM14 EM15 EM16					

Class Attendance (theory) [ON-SITE]	Combination of methods	G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	1.14	28.5	Y	N	
Class Attendance (practical) [ON-SITE]	Practical or hands-on activities	B01 B02 B03 B04 B05 EM02 EM05 EM07 EM11 EM13 EM14 EM15 EM16 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	0.8	20	Y	Y	
Formative Assessment [ON-SITE]	Assessment tests	B01 B02 B03 B04 B05 EM02 EM05 EM07 EM11 EM13 EM14 EM15 EM16 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	0.16	4	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study	B01 B02 B03 B04 B05 EM02 EM05 EM07 EM11 EM13 EM14 EM15 EM16 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	3.6	90	Y	N	
Project or Topic Presentations [ON-SITE]	project-based learning	B01 B02 B03 B04 B05 EM02 EM05 EM07 EM11 EM13 EM14 EM15 EM16 G01 G02 G03 G04 G05 G06 G07 G08 G09 G10 G11 G12 G13 G14 G15 T01 T02 T03 T04 T05 T06 T07 T08	0.3	7.5	Y	N	
		Total:	**6**	**150**			
Total credits of in-class work: 2.4							**Total class time hours: 60**
Total credits of out of class work: 3.6							**Total hours of out of class work: 90**

As: Assessable training activity
Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Test	70.00%	70.00%	
Laboratory sessions	10.00%	10.00%	
Theoretical papers assessment	20.00%	20.00%	
Total:	**100.00%**	**100.00%**	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject , an ordinary and an extraordinary one (evaluating 100% of the competences).

9. Assignments, course calendar and important dates

Not related to the syllabus/contents

Hours	**hours**
Class Attendance (theory) [PRESENCIAL][Combination of methods]	36
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	20
Formative Assessment [PRESENCIAL][Assessment tests]	90
Study and Exam Preparation [AUTÓNOMA][Self-study]	4

Global activity

Activities	**hours**
Class Attendance (theory) [PRESENCIAL][Combination of methods]	36
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	20
Formative Assessment [PRESENCIAL][Assessment tests]	90
Study and Exam Preparation [AUTÓNOMA][Self-study]	4
Total horas:	150

10. Bibliography and Sources

Publishing

Author(s)	Title/Link	house	Citv	ISBN	Year	Description
Manuel Repetto Jiménez, Guillermo Repetto Khun	Toxicología fundamental	Ediciones Díaz de Santos, S.A			2009	
Klaassen	Fundamentos de Toxicología	McGraw-Hill Interamericana de España S.L			2005	
Alumnos de Farmacia	Toxicoenciclopedia					
E. Mencías Rodríguez, L. M. Mayero Franco	Manual de Toxicología Básica	Ediciones Díaz de Santos		8479781369	2000	
Jose Bello Gutierrez, Adela López de Cerian Salsamendi	Fundamenttos de ciencia toxicológica	Ediciones Díaz de Santos, S.A			2001	