



1. General information

Course: FUNDAMENTALS OF MEDICAL RESEARCH
Type: BASIC
Degree: 332 - UNDERGRADUATE DEGREE PROGRAMME IN MEDICINE
Center: 9 - FACULTY OF MEDICINE OF CIUDAD REAL
Year: 1

Main language: Spanish

Use of additional languages:
Web site:

Code: 34301
ECTS credits: 6
Academic year: 2023-24
Group(s): 20
Duration: First semester
Second language:
English Friendly: Y
Bilingual: N

Lecturer: JOSE LUIS ALBASANZ HERRERO - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Facultad de Medicina CR/2.01	QUÍMICA INORG., ORG., Y BIOQ.	926295237	jose.albasanz@uclm.es	
Lecturer: MARIANO AMO SALAS - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Facultad de Medicina / 1.35	MATEMÁTICAS	926295300 ext.6843	Mariano.Amo@uclm.es	
Lecturer: INMACULADA BALLESTEROS YAÑEZ - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Facultad de Medicina/2.20/Decanato	QUÍMICA INORG., ORG., Y BIOQ.	926926 052244	inmaculada.byanez@uclm.es	
Lecturer: DARIO NUÑO DIAZ MENDEZ - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Facultad de Medicina/2.12	PSICLOGÍA	926295300 ext.6839	dario.diaz@uclm.es	
Lecturer: JAVIER FRONTINAN RUBIO - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Ed. Polivalente F.Medicina / 1.33	CIENCIAS MÉDICAS		Javier.Frontinan@uclm.es	
Lecturer: LYDIA JIMENEZ DIAZ - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Facultad de Medicina Ciudad Real/2.11	CIENCIAS MÉDICAS	926295300 ext 6838	lydia.jimenez@uclm.es	
Lecturer: LOURDES MARINO GUTIERREZ - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Facultad de Medicina/2.19	CIENCIAS MÉDICAS	926295300; ext 6840	Lourdes.Marino@uclm.es	6 hours per week that will be announced at the beginning of the academic year.
Lecturer: ALINO JOSE MARTINEZ MARCOS - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
FACULTAD DE MEDICINA (CR)/2.03	CIENCIAS MÉDICAS	926051923	alino.martinez@uclm.es	
Lecturer: JUAN DE DIOS NAVARRO LOPEZ - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Facultad de Medicina Ciudad Real/2.11	CIENCIAS MÉDICAS	926295300 Ext 3240	juan.navarro@uclm.es	
Lecturer: MARIA ISABEL PORRAS GALLO - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Facultad de Medicina/1.03	CIENCIAS MÉDICAS	926295300 (ext.6691)	mariaisabel.porras@uclm.es	6 hours per week that will be announced at the beginning of the academic year.
Lecturer: YOANA RABANAL RUIZ - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Facultad de Medicina Ciudad Real/2.05	CIENCIAS MÉDICAS	926052871	Yoana.Rabanal@uclm.es	
Lecturer: FRANCISCO JAVIER SANCHEZ BIELSA - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Facultad de Medicina Ciudad Real/2.10	CIENCIAS MÉDICAS	926295300 ext 6641	francisco.sanchez@uclm.es	
Lecturer: ISABEL MARIA UBEDA BAÑON - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Faculty of medicine of Ciudad Real	CIENCIAS MÉDICAS	926052256	isabel.ubeda@uclm.es	
Lecturer: MARTA VELASCO MARTIN - Group(s): 20				
Building/Office	Department	Phone number	Email	Office hours
Facultad de Medicina/2.19	CIENCIAS MÉDICAS	926295300; ext 6840	Marta.VelascoMartin@uclm.es	6 hours per week that will be announced at the beginning of the academic year.

2. Pre-Requisites

The requirements to access the degree.

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

The course "Fundamentals of Medical Research" belongs to Module II (Social Medicine, Communication Skills and Initiation to Research) and to Subject 2.3 (Introduction to Research in Medicine). It is a basic course, with 6 ECTS and is taught during the first semester of the first year.

The subject Introduction to Research in Medicine belongs to Module II (Social Medicine, Communication Skills and Initiation to Research). This subject is made up of two Basic Training (FB) subjects: Biostatistics: Fundamentals and Application in Medicine and Fundamentals of Medical Research.

The competencies provided by the Fundamentals of Medical Research subject allow students to learn the principles of the scientific method, biomedical research and clinical trials, as well as learn and use the principles of medicine based on (best) evidence. Under:

4. Degree competences achieved in this course

Course competences

Code	Description
2.31	To know, critically evaluate and know how to use the technologies and sources of clinical and biomedical information to obtain, organize, interpret and communicate clinical, scientific and health information.
2.37	Handle with autonomy a personal computer.
2.40	Understand and critically interpret scientific texts.
2.41	Know the principles of the scientific method, biomedical research and clinical trials.
2.42	Know the principles of telemedicine.
2.43	Know and manage the principles of (best) evidence-based medicine.
2.48	Make an oral and written public presentation of scientific papers and/or professional reports.
CT01	Proficiency in a second foreign language at level B1 of the Common European Framework of Reference for Languages.
CT02	Knowledge of Information and Communication Technologies (ICT).
CT03	Good oral and written communication skills.
G05	Recognize their own limitations and the need to maintain and update their professional competence, giving special importance to autonomous learning of new knowledge and techniques and motivation for quality.
G31	To know, critically evaluate and know how to use the sources of clinical and biomedical information to obtain, organize, interpret and communicate scientific and health information.
G32	Know how to use information and communication technologies in clinical, therapeutic, preventive and research activities.
G35	Understand the importance and limitations of scientific thinking in the study, prevention and management of diseases.
G36	To be able to formulate hypotheses, collect and critically evaluate information for problem solving, following the scientific method.
G37	To acquire the basic training for research activity.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Learning to design and organize the work. Acquiring habits of perseverance in the study.

Acquisition of oral and/or written presentation and communication skills.

Additional outcomes

Carry out an analysis and comment on the way to carry out the construction of scientific knowledge in Medicine (GC, G5, G31, G32, G34, G35, G37, 2.40 y 2.48).
Prepare a scientific article and present it orally and in writing (GB, GC, G31, G32, G35, G36, G37, 2.31, 2.37, 2.40, 2.41, 2.48).
Know the principles of the scientific method, biomedical research and clinical trials, and their limitations (G5, G32, G34, G35, G36, G37, 2.40 y 2.41).
Formulate hypotheses, collect and critically assess information for problem solving, following the scientific method (GB, G31, G32, G34, G35, G36, G37, 2.31., 2.41).
Know and manage the principles of medicine based on the (best) evidence (G36, 2.31 y 2.43).
Know the characteristics of the scientific article and other ways of presentation and dissemination of scientific activity (G31, G32, G35, G37, 2.31., 2.41).
Become familiar with study techniques in neuroanatomy, physiology, cell biology and biochemistry, both in the clinical and experimental settings (G37).

6. Units / Contents

Unit 1: Introduction to basic computer applications: word processors and spreadsheets

Unit 2: The scientific method and its incorporation into Medicine: science and scientific method; the hypothetical-deductive method in the elaboration of scientific knowledge; the incorporation of the hypothetical-deductive method to Medicine; criticism of the scientific method; the scientific method in Biomedicine, the Evidence-Based Medicine

Unit 3: The language and diffusion of medical science: scientific discourse and its language; medical terminology and the general mechanisms for the formation of medical terms; the dissemination of scientific information, the different formats for the presentation of the results of a research

Unit 4: Preparation and presentation of a scientific paper: its formal structure and written presentation, the critical reading of biomedical articles, and the oral dissemination of the results of a research paper. Fundamentals of Telemedicine

Unit 5: Study methods in biomedical research and their application to the resolution of a clinical case through the problem-based learning strategy

7. Activities, Units/Modules and Methodology								
Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description	
Class Attendance (theory) [ON-SITE]	Lectures	2.31 2.37 2.40 2.41 2.42 2.43 2.48 G05 G31 G32 G35 G36 G37	0.6	15	Y	Y		
Class Attendance (practical) [ON-SITE]	Practical or hands-on activities	2.31 2.37 2.40 2.41 2.42 2.43 2.48 G05 G31 G32 G35 G36 G37	0.4	10	Y	Y		
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	2.31 2.37 2.40 2.41 2.42 2.43 2.48 G05 G31 G32 G35 G36 G37	0.4	10	Y	Y		
Project or Topic Presentations [ON-SITE]	Guided or supervised work	2.31 2.37 2.40 2.41 2.42 2.43 2.48 G05 G31 G32 G35 G36 G37	0.6	15	Y	Y		
Progress test [ON-SITE]	Assessment tests	2.31 2.37 2.40 2.41 2.42 2.43 2.48 G05 G31 G32 G35 G36 G37	0.1	2.5	Y	Y		
Final test [ON-SITE]	Assessment tests	2.31 2.37 2.40 2.41 2.42 2.43 2.48 G05 G31 G32 G35 G36 G37	0.1	2.5	Y	Y		
Other on-site activities [ON-SITE]	Self-study	2.31 2.37 2.40 2.41 2.42 2.43 2.48 G05 G31 G32 G35 G36 G37	0.8	20	Y	N		
Study and Exam Preparation [OFF-SITE]	Self-study	2.31 2.37 2.40 2.41 2.42 2.43 2.48 G05 G31 G32 G35 G36 G37	2.56	64	Y	N		
Computer room practice [ON-SITE]	Practical or hands-on activities	2.31 2.37 2.40 2.41 2.42 2.43 2.48 G05 G31 G32 G35 G36 G37	0.2	5	Y	Y		
Writing of reports or projects [OFF-SITE]	Group Work	2.31 2.37 2.40 2.41 2.42 2.43 2.48 G05 G31 G32 G35 G36 G37	0.18	4.5	Y	Y		
On-line Activities [OFF-SITE]	Problem solving and exercises		0.06	1.5	Y	N		
Total:			6	150				
Total credits of in-class work: 3.2			Total class time hours: 80					
Total credits of out of class work: 2.8			Total hours of out of class work: 70					

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
Final test	20.00%	45.00%	
Progress Tests	25.00%	0.00%	
Practicum and practical activities reports assessment	50.00%	55.00%	
Assessment of active participation	5.00%	0.00%	
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).

Evaluation criteria for the final exam:

Continuous assessment:

Evaluation criteria for the ordinary call:
¿ Continuous assessment:
A student enrolled for the first time in a subject is entitled to two calls during the academic year:

1. Ordinary call: it comprises the continuous evaluation of all theoretical and practical activities reflected in the timetable attending to the conditions described in the teaching guide of the subject and the minimum attendance requirements to pass the subject. The practical part is not recoverable and it is a fundamental requirement to have completed all the practices in order to pass the subject.
 2. Extraordinary call: It includes the evaluation exclusively of the failed part of the subject in the ordinary call. It consists of a theoretical exam and the rest of the marks of the practical part will be those obtained during the course in reports, seminars, presentations, assignments, participation and attitude.
- In case of failing the course the first time it is taken, for the following academic year there will be two of this three options:
1. Ordinary call: within this call, two modalities can be chosen:
 - a. Attendance mode: It includes the continuous evaluation of all theoretical and practical activities reflected in the timetable, complying with the conditions described in the teaching guide of the subject, as if the subject was taken for the first time. Thus, the grades obtained in the previous year will not be taken into account.
 - b. Non-attendance mode: It includes the evaluation of only the failed part of the subject in the previous course through a theoretical exam and/or a practical exam per semester on the same date as the final exam of each semester. The marks for practical exams other than the practical exam will be kept from the previous course. This modality can only be chosen in the case of having taken the subject in the ordinary call in the previous academic year.
 2. Extraordinary call: It includes the evaluation of only the failed part of the subject in the ordinary call either of the current academic year, if the student has chosen the ordinary on-site call, or of the previous academic year, in the rest of the cases. It will consist of a theoretical exam, and the rest of the marks of the practical part will be those of the current or previous course. In the case of not having taken the ordinary on-site exam in the current or previous academic year, the grades of previous exams will not be taken into account, since only one course will be kept.
 3. Special final exam: This includes the evaluation of only the failed part of the subject in the previous academic year. This call can only be requested in key subjects. It will consist of a theoretical exam and the rest of the marks of the practical part will be those of the previous course. In the case of not having taken the ordinary on-site exam in the current or previous course, the grades of previous exams will not be taken into account since only one course will be kept.

These conditions will only be maintained in the academic year consecutive to the ordinary on-site call of a subject. The grade of the practical or theoretical part passed will only be kept if the minimum attendance requirements to pass the subject described in the electronic guide have been met.

If the subject is not passed in the second academic year, the same biannual cycle criteria described for the first and second year of enrollment will be followed in the third and successive odd numbered years of enrollment.

ORDINARY CALL:

Theoretical evaluation:
45% distributed in:
- 25% module exams
- 20% final semester exams
To pass the course it will be necessary to obtain 40% of this 45%, which means, at least, 1.8 points in the theoretical part of the 10 total points of the course and to fulfill the requirements of the section "Evaluation criteria".
For the module exams (25% of the grade, i.e. 2.5 points) no minimum grade is established, so all grades obtained will be added together.
For the final exams (20% of the grade, i.e. 2 points) a minimum grade equal to 40% of the maximum grade to be achieved in each final exam is established. In order to favor the weight of the continuous evaluation in the final grade, not reaching the minimum grade established will not mean the impossibility to pass the course, but the points of that final exam will not be added to the rest of the points obtained.

Evaluation of practices, presentations, problems, assignments, participation and attitude:
55% valued jointly as follows for basic subjects:
- Presentations, papers and practices: 50%.
- Participation and attitude: 5%.

To pass the course it will be necessary to obtain 40% of the 55%, which represents at least 2.2 points in the practical part of the 10 total points of the course and to fulfill the requirements of the section "Evaluation Criteria" that appears in the electronic guide.

Very important NOTE.- The detection of plagiarism in any of the practices will mean failing the subject in the ordinary call.

EXTRAORDINARY CALL, SPECIAL FINAL CALL, ORDINARY NON-ATTENDANCE CALL:

Theoretical evaluation: exam with a weight of 45%. To pass the course it will be necessary to obtain 40% of this 45%, which means at least 1.8 points in the theoretical part of the 10 total points of the course and meet the requirements of the section "Evaluation criteria". In case of having passed the theoretical part of the course in the current or previous year, the grade obtained in the last exam will be maintained.
Practical evaluation: to pass the course it will be necessary to obtain 40% of the 55%, which means at least 2.2 points in the practical part of the 10 total points of the course and to fulfill the requirements of the section "Evaluation criteria". In case of having passed the practical part in the current or previous course, the grade obtained in the last exam will be maintained.

Non-continuous evaluation:

See what is described in the previous point.

Specifications for the resit/retake exam:

See what is described in the previous point.

Specifications for the second resit / retake exam:

See what is described in the previous point.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
Class Attendance (theory) [PRESENCIAL][Lectures]	15
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	15
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	10
Project or Topic Presentations [PRESENCIAL][Guided or supervised work]	15

Progress test [PRESENCIAL][Assessment tests]	2.5
Final test [PRESENCIAL][Assessment tests]	2.5
Other on-site activities [PRESENCIAL][Self-study]	20
Study and Exam Preparation [AUTÓNOMA][Self-study]	64
Writing of reports or projects [AUTÓNOMA][Group Work]	6
General comments about the planning: The temporary planning may be modified due to unforeseen causes.	
Unit 1 (de 5): Introduction to basic computer applications: word processors and spreadsheets	
Group 20:	
Initial date: 18-09-2023	End date: 06-10-2023
Comment: Unit 1	
Unit 2 (de 5): The scientific method and its incorporation into Medicine: science and scientific method; the hypothetical-deductive method in the elaboration of scientific knowledge; the incorporation of the hypothetical-deductive method to Medicine; criticism of the scientific method; the scientific method in Biomedicine, the Evidence-Based Medicine	
Group 20:	
Initial date: 09-10-2023	End date: 27-10-2023
Comment: Unit 2	
Unit 3 (de 5): The language and diffusion of medical science: scientific discourse and its language; medical terminology and the general mechanisms for the formation of medical terms; the dissemination of scientific information, the different formats for the presentation of the results of a research	
Group 20:	
Initial date: 30-10-2023	End date: 17-11-2023
Comment: Unit 3	
Unit 4 (de 5): Preparation and presentation of a scientific paper: its formal structure and written presentation, the critical reading of biomedical articles, and the oral dissemination of the results of a research paper. Fundamentals of Telemedicine	
Group 20:	
Initial date: 20-11-2023	End date: 05-12-2023
Comment: unit 4	
Unit 5 (de 5): Study methods in biomedical research and their application to the resolution of a clinical case through the problem-based learning strategy	
Group 20:	
Initial date: 11-12-2023	End date: 08-01-2024
Comment: Unit 5	
Global activity	
Activities	hours
Study and Exam Preparation [AUTÓNOMA][Self-study]	64
Writing of reports or projects [AUTÓNOMA][Group Work]	6
Class Attendance (theory) [PRESENCIAL][Lectures]	15
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	15
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	10
Project or Topic Presentations [PRESENCIAL][Guided or supervised work]	15
Progress test [PRESENCIAL][Assessment tests]	2.5
Final test [PRESENCIAL][Assessment tests]	2.5
Other on-site activities [PRESENCIAL][Self-study]	20
Total horas: 150	

10. Bibliography and Sources							
Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description	
Nájera López, Alberto	Fundamentos de informática para profesionales de la salud (v	Alberto Nájera López		978-1-4092-6698-3	2009		
Pullman, Bernard	El átomo en la historia de la humanidad	Biblioteca Buridán			2010		
Stevens, Alan	Histología humana	Elsevier		978-84-8174-882-6	2006		
Sánchez González, Miguel Ángel	Historia de la medicina y de las humanidades médicas	Elsevier-Masson	Barcelona	9788445821152	2012		
Argimón Pallás, José M.	Métodos de investigación clínica y epidemiológica	Elsevier España		84-8174-709-2	2004		
Ayazragüena Sanz, Mariano et al.	Ciencia, tecnología y sociedad	Noesis	Madrid		1996		
Chalmers, A. F.	¿Qué es esa cosa llamada ciencia?	; México Siglo XXI		978-84-323-1430-8	2010		
Day, Robert A.	Cómo escribir y publicar trabajos científicos	Organización Panamericana de la Salud		978-92-75-31621-X	2008		
Gartner, Leslie P. (1943-)	Texto Atlas de Histología	McGraw-Hill		970-10-6651-0	2008		
Geneser, Finn	Histología : sobre bases biomoleculares	Editorial Médica Panamericana		84-7903-474-2	2000		
González, Wenceslao J.	La predicción científica. Concepciones filosófico-metodológicas desde H. Reichenbach a N. Rescher	Montesinos			2010		
Gutiérrez Rodilla, Bertha	La ciencia empieza en la palabra. Análisis e historia del lenguaje científico	Península	Barcelona		1998		
Gutiérrez Rodilla, Bertha	La influencia del inglés sobre nuestro lenguaje médico				1997		
Gutiérrez Rodilla, Bertha M.	El lenguaje de las ciencias	Gredos		84-249-2741-9	2005		
Jimenez Villa, J.; Argimón Pallàs, J.M.; Martín Zurro, A.; Vilardel Tarrés, M.	Publicación científica biomédica. Cómo escribir y publicar un artículo de investigación	Elsevier		978-84-8086-461-9	2010		
Kuhn, Thomas S.	La estructura de las revoluciones científicas	Fondo de Cultura Económica		84-375-0046-X	2001		
López Piñero, José María	Introducción a la terminología médica	Masson		84-458-1439-7	2005		