

**COURSE DATA****Data Subject**

Code	34073
Name	Documentation and Scientific Methodology
Cycle	Grade
ECTS Credits	4.5
Academic year	2020 - 2021

Study (s)

Degree	Center	Acad. year	Period
1201 - Degree in Pharmacy	Faculty of Pharmacy and Food Sciences	1	First term
1211 - D.D. in Pharmacy-Human Nutrition and Dietetics	Faculty of Pharmacy and Food Sciences	1	First term

Subject-matter

Degree	Subject-matter	Character
1201 - Degree in Pharmacy	36 - Scientific methodology and documentation	Obligatory
1211 - D.D. in Pharmacy-Human Nutrition and Dietetics	1 - Asignaturas obligatorias del PDG Farmacia-Nutrición Humana y Dietética	Obligatory

Coordination

Name	Department
VIDAL INFER, ANTONIO MARTÍN	225 - History of Science and Documentation

SUMMARY

What is usually called "scientific method" is a set of theoretical and experimental practices very diverse characteristics vary over time and space and across disciplines and various fields of science. Even within a single scientific discipline, there are diverse views on the best ways to get sufficiently used to produce new knowledge. Therefore, in this block use the expression "scientific methodology" to refer to the heterogeneous set of strategies, procedures, reasoning, experimental practices, observational methods, etc. following scientists in their investigations, which are developed in a variety of places (observatories, laboratories, geological sites, hospitals, factories, etc.), often with the help of scientific instruments of very different characteristics. And all this in the context of certain societies and cultures very variable condition of the development of scientific activity over time.



In parallel to the great development and has taken on dimensions that modern science during the twentieth century, the discipline of information science has developed a range instruments for recording scientific production and facilitate rapid access to accurate information. Likewise, the large expansion that has seen the Internet as a communication and dissemination of information made available to researchers and users a lot of resources and information sources, regardless of spatial boundaries and intermediaries, so is essential from the field of training to introduce students to the knowledge and use of these tools and resources to be able to develop the skills to locate and manage the information they need or may be of interest to the exercise in their professional and research activities.

The aim of the course is to provide basic concepts and schemes to address the issue through various special cases (seminars). First, we discuss several specific topics, closely related to the pharmacy: anatomical dissection, animal experimentation and clinical trials. It is also dedicated to a specific scientific terminology along with a brief introduction to the various types of scientific instruments.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

Previous requirements or recommendations

Being an introductory course, no prerequisites are required apart from skills and knowledge provided by high school studies. However, it should be noted that the theoretical and practical seminars involve the use of a great deal of abstract thinking, adoption of a diachronic analysis and dealing with various societies and cultures.

OUTCOMES

1201 - Degree in Pharmacy

- Development of skills to update their knowledge and undertake further studies, including pharmaceutical specialization, scientific research and technological development, and teaching.
- Ability to collect and transmit information in English with a level of competence similar to the B1 of the Council of Europe.
- Module: Legislation and Social Pharmacy to master information retrieval techniques related to primary and secondary information sources (including databases by using computers) and computerized.
- Module: Legislation and Social Pharmacy - Know the techniques of oral and written communication by acquiring skills that allow informing users of pharmaceutical establishments in terms intelligible and appropriate to various cultural levels and social environments.



LEARNING OUTCOMES

We want students to think of science as a highly complex activity, related to society and the culture in which it is developed. Therefore, some aspects of the relationships between science, technology and society will be discussed, in order to offer keys that allow reflection on the working methods of science and its role in society. It aims to promote humanistic and interdisciplinary training, so that the student can favor the integration of their knowledge in a critical and autonomous way and address the analysis of situations in which knowledge of various disciplines are required.

A broad and multi-faceted vision of the different aspects that constitute the scientific methodology will be offered, as well as a discussion of a great variety of topics associated with this methodology in biomedical subjects. That is why we have articulated the agenda in four blocks: a general approach to what science is and how it works; an anthropological approach from the perspective of medicine and pharmacy; a sociological and historical approach, particularly to the pharmaceutical profession over time, as well as mechanisms for dissemination and communication of knowledge among different audiences; and, finally, a perspective from the technical particularities that intervene: scientific instruments, animal experimentation and clinical trials.

In this subject an introduction to the sources of scientific information will be made, defining the main documentary typologies, characterizing their informative usefulness and the forms of access to them. The procedures to identify and select the desired information in the systems for the provision of scientific information, identifying the main existing databases in the health sciences, and the search strategies and interrogation techniques most appropriate to identify the documents will be presented. that allow to satisfy the informative needs of the user. In addition, some of the existing tools and procedures for managing and evaluating selected documents of interest will be presented.

DESCRIPTION OF CONTENTS

1. Introducing Documentation and Scientific Methodology

2. The methods of Science

3. Science in movement: scientific revolutions

4. Science frontiers and the other ways of knowledge

5. The social construction of illness



6. The social life of medicines

7. The language of Science

8. The Scientific communication

9. Discipline and profession

10. Health Sciences and Gender

11. The consciousness of Science: Bioethics

12. A necessary evil: experimenting on animals

13. Testing therapies in humans: clinical trials

14. Evidence-Based Medicine

15. Science, Medicine, and Technology

16. The pharmaceutical industry

17. Intellectual property: patents

18. Needs and uses of information in Pharmacy

**19. Primary sources of scientific information in Pharmacy****20. Bibliographic searches in Pharmacy**

- Design of search strategies
- Searches in Health Sciences specific databases: Pubmed and Embase
- Searches in multidisciplinary databases: Web of Science and Scopus

21. Secondary sources of scientific information in Pharmacy: databases**22. Citations, impact and how to manage information in Pharmacy****WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	25,00	100
Seminars	10,00	100
Computer classroom practice	5,00	100
Tutorials	2,00	100
Development of group work	30,00	0
Study and independent work	8,00	0
Readings supplementary material	2,50	0
Preparation of evaluation activities	25,00	0
Preparation of practical classes and problem	2,00	0
TOTAL	109,50	

TEACHING METHODOLOGY**Theoretical classes**

We consider that the theoretical classes should not assume in any case passivity on the part of the students. For this we opted for an operation of the class based on the so-called flipped classroom. This implies previous work of the student to prepare the contents and readings proposed in advance by the teacher. During the face-to-face session, debates and complementary explanations will be organized. Additionally, the teacher can propose, explain and develop specific activities during the session. To prepare the theoretical sessions, develop the practices and be able to study the subject, the following manual is necessary:

Carmel Ferragud and Antonio Vidal (coords), Ruth Lucas and José Ramón Bertomeu, Documentation



and methodology in Health Sciences, Valencia, Nau Llibres, 2017.

This book can be consulted in different libraries of the UV, and can be purchased at <https://naullibres.com/libro/documentacion-y-metodologia-ciencias-la-salud>

Power point presentations that teachers use will not be accessible in the Virtual Classroom. Any information that students consider appropriate to pick up should be taken during the classes or obtained through the manual, other materials shared by the teachers or the recommended bibliography. During the theoretical sessions, 5 activities will be proposed for the whole subject that will be carried out during the session and will be delivered at the end of the session, without prior notice of when they will be carried out.

Practical classes

The practical sessions, of compulsory attendance, consist of 5 seminars and 2 practical sessions of computer science.

The seminars will be the following:

Seminar 1 UV Library

Seminar 2 Searches

Seminar 3 Scientific article

Seminar 4 Impact and visibility of research

Seminar 5 Manage information

The computer practices will be:

Session 1: Search in specific databases in health sciences: Pubmed and Embase

Session 2: Search in multidisciplinary databases: Web of Science and Scopus.

The realization of the exercises will take place in computer rooms where the students will work with computers individually or in pairs, according to the availability of equipment. The faculty of the subject will indicate in advance the contents that the students must have consulted or read in order to perform the corresponding exercise.

The content worked during the sessions will be sent at the end of the sessions through the Virtual Classroom. Exceptionally, the faculty may extend the deadline if the situation so requires.

During the semester the students will develop a monographic work, in groups of 4 or 5 components, on a topic related to the subject. The subjects under study will be the following:

1. The world of anxiolytics: benzodiazepines.



2. Analgesics and antipyretics.
3. Anti-inflammatories: ibuprofen and dexketoprofen.
4. Antibiotics: amoxicillin.
5. Vaccines: the case of HPV.
6. The treatment of chronic pain: opioids.
7. Attention deficit hyperactivity disorder: methylphenidate.
8. The treatment of obesity.
9. Degenerative diseases: Alzheimer's, ERA.
10. The pharmacological approach to drug addiction.

Both the composition of these groups and the assignment of the subject will be done randomly by the faculty of the subject from the beginning of the same, without the possibility of changes. A connection should be made between the topics studied in the theoretical sessions and the topic of analysis. For this purpose, information searches should be carried out in the appropriate databases and following the instructions given by the teachers in the documentation part. In this way, for example, it is necessary to analyze how the pharmaceutical industry has been present in the research and development process of a drug or group of medicines; how they have handled animals and conducted clinical trials; what social and economic repercussions this medicine has had; its accessibility; how it has been received among the public, its success or failure, etc. For this it is also possible to manage other sources of information beyond the scientific journal, such as newspapers, blogs, or other media. In short, it is about making an approach as deep and plural as possible to the world of medicine. In addition, we intend to have a critical view of the set of information handled.

The objectives of this work are:

- encourage cooperation among students
- develop an investigation that simulates as closely as possible the different phases of a research process in the world of biomedicine
- foster a critical spirit, with as broad a view as possible towards the subject that has been proposed as the thematic axis
- offer the results of this work following the most common vehicle in science: the journal article

This work will have the following formal characteristics:

- a scientific article structure, with the following sections: Introduction, Material and method, Results and Discussion, Conclusions.



- The bibliography should be done following the Vancouver style of citation.
- a maximum of 30 pages in doc, docx or rtf format (Times News Roman 12, interlinear 1,5).
- the work may have figures or images duly described and cited.
- a conceptual map with the basic information handled will be presented.
- **IMPORTANT:** the teaching staff can reject those works that do not meet the minimum conditions of formal correction (spelling, grammar, etc ...)

In order to develop this work conveniently, the group members should be in contact with certain frequency. It is suggested to use possibilities such as videoconferencing to maintain contact and resolve situations that are not possible directly in the faculty.

The two tutoring sessions will be dedicated to keeping track of the work by the teachers. During these sessions the groups can take advantage to advance and resolve any doubts that may arise. We also suggest using individual tutoring sessions.

EVALUATION

It will be necessary to obtain a minimum grade of 5 out of 10 in order to pass the subject.

Theoretical evaluation:

a final written exam will be carried out, which will mean 60% of the grade. It will be necessary to obtain a minimum grade of 4 out of 10 in the exam to be able to average with the practical part. It will consist of 4 short questions [half page maximum], 1 essay question and 2 practical cases about bibliographic searches.

Practical evaluation:

-Monographic

A monographic work in group will be presented, which will represent 20% of the grade, in the terms explained above. The deadline for delivery of the work, through the Virtual Classroom, will be determined by the faculty and notified on the first day of class. The non-presentation of the monographic work will imply a grade of Not presented in the subject. A grade lower than 4 out of 10 in the monographic work will suppose a fail in the subject.

-Works delivered in class

After the conclusion of the practical sessions, those activities proposed by the teaching staff will be delivered. The joint qualification of these activities may reach 20%.



REFERENCES

Basic

- Ferragud C, Vidal A, Bertomeu JR, Lucas R. Documentación y metodología en ciencias de la salud. Valencia: Nau Llibres; 2017.
- Ferran Ferrer N, Pérez-Montoro Gutiérrez M. Búsqueda y recuperación de la información. 1ª en lengua castellana ed. Barcelona: Editorial UOC; 2009
- Fara P. Breve historia de la ciencia. Barcelona: Ariel; 2009.
- Bowler P, Morus I. Panorama general de la ciencia moderna. Barcelona: Crítica; 2007
- Collins H et al. El gólem: lo que todos deberíamos saber acerca de la ciencia. Barcelona: Crítica; 1996
- Cordon García JA. Las nuevas fuentes de información: información y búsqueda documental en el contexto de la web 2.0. Madrid: Pirámide; 2010.

Additional

- Informe APEI sobre acceso abierto | E-LIS. E-prints in Library and Information Science Disponible en: <http://eprints.rclis.org/handle/10760/12507>. Fecha de acceso 5/31/2011, 2011.
- Cordon García JA, López Lucas J, Vaquero Pulido JR. Manual de investigación bibliográfica y documental: teoría y práctica. Madrid: Pirámide; 2001.
- Cordon García JA, López Lucas J, Vaquero Pulido JR. Manual de búsqueda documental y práctica bibliográfica. Madrid: Pirámide; 1999
- Hernández Sampieri R, Fernández Collado C, Baptista Lucio P. Metodología de la investigación. 5a ed. Madrid: McGraw-Hill; 2010
- Jiménez Villa J, Argimón Pallás JM, Martín Zurro A. Publicación científica biomédica: cómo escribir y publicar un artículo de investigación. Barcelona: Elsevier Science; 2010
- Pinto Molina M, Mitre M, Doucet A, Sánchez MJ. Aprendiendo a resumir: prontuario y resolución de casos. Gijón: Trea; 2005

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

Teaching methodology

The theoretical content of the subject, more related to the topics of Scientific Methodology, will be taught during the theoretical sessions established in the schedule.



Master class sessions: Teaching will be in person until the first week of November (provided that the current pandemic situation allows it). From this moment on, the theoretical classes will continue to be taught via synchronous videoconference. The materials for each topic will be previously posted in the Virtual Classroom (slides and readings of interest). During the work session in the classroom, and then with Blackboard, various participatory strategies will be presented. Discussion forums will be opened where students are invited to participate with questions about the session. Other activities will be questionnaires, comments on video clips, pictures or short articles. These activities will be uploaded in the Virtual Classroom at a certain time within the session and will form part of the continuous evaluation.

These activities will alternate with the teachers' comments and master explanations supported by power point.

Students must prepare five essays based on the theoretical content that the teachers will indicate. In these, they should capture what they have learned through the readings and previous works carried out, the contributions of the classmates in the forum and personal reflection. Direct copying of any material will be penalized. Students will receive individualized comments and the essays will show a student evolution, thus reinforcing the idea of continuous evaluation.

Practical teaching (Individual and collaborative work)

The theory related to Documentation will be integrated into the development of practical sessions and seminars, directly in the computer room. Compilation through the "Task" option of the virtual classroom of the practical activities at the stipulated time. The practical sessions and seminars may be replaced by a combination of videoconferences, locutions within the explanations, forums and resolution of activities through the virtual classroom.

Group tutoring

The main objective is to offer a working technique, the conceptual map, and end up configuring one of the theme that has been developed, and which will also be a part of the final grade. The face-to-face tutorial sessions may be replaced by a combination of videoconferences, locutions within the explanations, forums and resolution of activities through the virtual classroom.

On the other hand, the virtual tutoring program is maintained (consultations by email or through the virtual classroom tutoring forum).

Evaluation

-Continuous Assessment Itinerary: Students' learning will be assessed around the two types of teaching modalities described:

1) Evaluation by the teacher: modality of evaluation that implies a process by which the professor by means of some questionnaires or on-line essays and the realization of practices by part of the student will value the knowledges acquired by the students.



2) Student self-assessment: assessment modality that involves a process by which the student analyzes and evaluates their own activities by completing the online questionnaires.

Evaluable activities: 5 essays referring to theoretical teaching (40%); 2 Computer practices (20%); 5 computer room seminars (20%); Conceptual maps (10%); Forum participation (10%).

-Final exam itinerary: Theoretical exam (60%); Computer practices and seminars (40%).