# UNIVERSIDAD DE CASTILLA - LA MANCHA

# GUÍA DOCENTE

## 1. General information

**Course:** PHARMACEUTICAL TECHNOLOGY III
**Code:** 14340
**Type:** CORE COURSE
**ECTS credits:** 6
**Degree:** 376 - UNDERGRADUATE DEGREE PROGRAMME IN PHARMACY
**Academic year:** 2022-23
**Center:** 14 - FACULTY OF PHARMACY
**Group(s):** 10
**Year:** 5
**Duration:** First semester
**Main language:** Spanish
**Second language:** English
**Use of additional languages:**
**English Friendly:** Y
**Web site:**
**Bilingual:** N

Lecturer: **JOAQUIN GONZALEZ FUENTES** - Group(s): **10**

| Building/Office | Department | Phone number | Email | Office hours |
|---|---|---|---|---|
| Facultad de Farmacia AB. Despecho 3.8 | CIENCIAS MÉDICAS | 2236 | joaquin.gfuentes@uclm.es | |

Lecturer: **MANUEL JESUS SANTANDER ORTEGA** - Group(s): **10**

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## 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. |
| EFT01 | Using statistical analysis applied to pharmaceutical sciences |
| EFT02 | Apply both computational and data processing techniques, for getting information about physical, chemical and biological data |
| EFT05 | Using statistical analysis applied to pharmaceutical sciences |
| EFT06 | Design, optimize and elaborate the pharmaceutical forms guaranteeing their quality, including the formulation and quality control of medicines, the development of master formulas and officinal preparations. |
| EFT07 | Able to apply the quality control process to medical devices, dermopharmaceutical and cosmetic products and package materials. |
| EFT10 | Demonstrate knowlege of the physicochemical and biopharmaceutical properties of drugs and excipients, as well as the possible interaction between them |
| 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. |
| G04 | Design, prepare, supply and dispense medicines and other products of health interest. |
| 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. |
| 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 controls in raw materials, semi-finished and finished products, as well as the validation of processes in order to ensure the quality of the medicines

manufactured.
Understanding the checks necessary to ensure the quality of pharmaceutics skin products, sanitary products, and cosmetics.

Know the vehiculizacion nanoparticles as forms of drugs.
Ability to work under standards of good laboratory practice (GLP).
Ability to design a pharmaceutical laboratory in response to their facilities and processes necessary to ensure the quality of the products manufactured.
To know and to develop good manufacturing practiques (GMP) for the different activities to develop in Pharmaceutical Industry, pharmacy and hospital Pharmacy Service.
Know and understand the fundamentals of the Pharmaceutical Technology
Develop drugs regarding its qualitative and quantitative composition and select the optimal technological processes to be used in its manufacture.

## 6. Units / Contents

**Unit 1:**
- **Unit 1.1**
- **Unit 1.2**
- **Unit 1.3**

**Unit 2:**
- **Unit 2.1**
- **Unit 2.2**
- **Unit 2.3**
- **Unit 2.4**
- **Unit 2.5**

**Unit 3:**
- **Unit 3.1**
- **Unit 3.2**

**Unit 4:**
- **Unit 4.1**
- **Unit 4.2**
- **Unit 4.3**
- **Unit 4.4**
- **Unit 4.5**

**Unit 5:**
- **Unit 5.1**

**Unit 6:**
- **Unit 6.1**

## 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] | Combination of methods | B01 B02 B03 B05 EFT01 EFT02 EFT05 EFT06 EFT07 EFT10 G01 G04 G13 G15 T01 T02 T03 T04 T05 T06 T07 T08 | 1.44 | 36 | Y | N | |
| Class Attendance (practical) [ON-SITE] | Practical or hands-on activities | B01 B02 B03 B05 EFT01 EFT02 EFT05 EFT06 EFT07 EFT10 G01 G04 G13 G15 T01 T02 T03 T04 T05 T06 T07 T08 | 0.8 | 20 | Y | Y | |
| Study and Exam Preparation [OFF-SITE] | Self-study | B01 B02 B03 B05 EFT01 EFT02 EFT05 EFT06 EFT07 EFT10 G01 G04 G13 G15 T01 T02 T03 T04 T05 T06 T07 T08 | 3.6 | 90 | Y | N | |
| Formative Assessment [ON-SITE] | Assessment tests | B01 B02 B03 B04 B05 EFT01 EFT02 EFT05 EFT06 EFT07 EFT10 G01 G04 G13 G15 T01 T02 T03 T04 T05 T06 T07 T08 | 0.16 | 4 | Y | Y | |
| | | **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 | 20.00% | 20.00% | |
| | | | |

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|---|---|---|---|---|
| Assessment of active participation | **Total:** | 10.00% **100.00%** | 10.00% **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 |
| Study and Exam Preparation [AUTÓNOMA][Self-study] | 90 |
| Formative Assessment [PRESENCIAL][Assessment tests] | 4 |

**Global activity**

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

## 10. Bibliography and Sources

| Author(s) | Title/Link | Publishing house | Citv | ISBN | Year | Description |
|---|---|---|---|---|---|---|
| Benitez Palomeque, E. | Good Manufactering Practices. La gestión técnica en la fabricación de medicamentos. Consejos prácticos. | Ed. Centro de Estudios Superiores de la Industria Farmacéutica | Madrid | 84-921046-0-0 | 1996 | |
| Cole, G. | Pharmaceutical production facilities: design and applications. 2ª edición. | CRC Press | | 0-7484-0438-4 | 1998 | |
| S. Cox Gad | Pharmaceutical Manufacturing Handbook: Regulations and Quality | Wiley | | 978-0-470-25959-7 | 2008 | |
| Salazar Macián, R. | Tecnología Farmacéutica Industrial, vol. I y II | Romargraf S.A. | Barcelona | 84-931913-4-5 | 2003 | |
| Salazar Macián, R. | Análisis y Control de Medicamentos | Romargraf S.A. | Barcelona | 84-931913-7-X | 2005 | |
| Salazar Macián, R. | Cualificación y validación: elementos básicos de la calidad y productividad | Romargraf S.A. | Barcelona | 978-84-931913-8-2 | 2007 | |
| Salazar Macián, R. | Gestión de la Calidad en el Desarrollo y Fabricación de Medicamentos, vol. I y II | Romargraf S.A. | Barcelona | 84-931913-0-2 | 2001 | |
| Y. Qiu | Developing Solid Oral Dosage Forms | Elsevier | | 978-0-444-53242-8 | 2013 | |
| del Arco Ortiz de Zarate, J. | Formulación magistral de medicamentos. | Colegio Oficial de Farmacéuticos de Vizcaya. | | 84-606-1557-X | 1994 | |
| | Formulario Nacional | Ministerio de Sanidad y Consumo | | 978-84-7978-813-1 | 2007 | |
| | Formulario Nacional , 2ª edición | | | | 2015 | |
| | http://biblioteca.uclm.es/ | | | | | |
| | Medscape DrugInfo | | | | | |
| | http://search.medscape.com/reference-search | | | | | |
| | Pharmaceutical manufacturing handbook : production and proce | Wiley-Interscience, | | 978-0-470-25958-0 | 2008 | |
| | Portal farmacéutico. Bases de datos del CGCOF (BOT) | | | | | |
| | http://www.portalfarma.com/Paginas/default.aspx | | | | | |
| | Real Farmacopea Española. 5ª Edición. | Ministerio de Sanidad, Servicios Sociales e Igualdad. Madrid | | | 2015 | |
| | http://biblioteca.uclm.es/ | | | | | |
| | Tratado de Tecnología Farmacéutica. Volumen I: Sistemas farmacéuticos | Sintesis | | 9788490770986 | 2016 | |
| | Tratado de Tecnología | | | | | |

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|---|---|---|---|
| Farmacéutica. Volumen II: Operaciones básicas | Sintesis | 9788490771020 | 2016 |