# Course Guide for Human and Cell Physiology II

## Academic Year 2020-2021

(Date last update: 08/07/2020)  
(Date approved in Department Council: 08/07/2020)

<table>
<thead>
<tr>
<th>Module</th>
<th>Subject Matter</th>
<th>Year</th>
<th>Semester</th>
<th>Credits</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine and Pharmacology</td>
<td>Human and Cell Physiology</td>
<td>2nd</td>
<td>2nd</td>
<td>6 ECTS (4,5 T+ 1,5 P)</td>
<td>Compulsory subject</td>
</tr>
</tbody>
</table>

### Teaching Staff

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(T*: Teoría; P*: Prácticas)

### (T*: Teoría; P*: Prácticas)

- Nombre Apellido Apellido: Parte I “XXXXXXX”
- Nombre Apellido Apellido: Parte II “YYYYYYY”

Dpto. Fisiología, 1a planta, Facultad de Farmacia. 958243879

#### TUTORIAL SCHEDULE OR LINK TO WEBSITE

http://www.ugr.es/~fisiougr/totorias.php

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1 Consult any updates in Acceso Identificado > Aplicaciones > Ordenación Docente  
(웃) This course guide should be filled in according to UGR regulations on assessment of student learning:  
(http://secretariageneral.ugr.es/pages/normativa/fichasugr/ncg7121/!)
<table>
<thead>
<tr>
<th>BEGINS TO UNDERGRADUATE DEGREE PROGRAMME</th>
<th>AND ALSO TO OTHER UNDERGRADUATE DEGREE PROGRAMMES</th>
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</thead>
<tbody>
<tr>
<td>Grado in PHARMACY</td>
<td>Medicine, Speech Therapy, Biological Sciences, Nursing, Physiotherapy, Nutrition, Food Technology, Occupational Therapy, Sport Sciences</td>
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<tr>
<th>PREREQUISITES OR RECOMMENDATIONS (where applicable)</th>
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<tbody>
<tr>
<td>Recommendations: to have previous basic knowledge (background knowledge of Chemistry, Anatomy and Histology, Biochemistry, Metabolism, Human and Cell Physiology etc). A good standard of English and informatics skills are also required.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>BRIEF DESCRIPTION OF CONTENT (ACCORDING TO OFFICIAL VALIDATION REPORT)</th>
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</table>

<table>
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<tr>
<th>GENERAL AND SPECIFIC COMPETENCES</th>
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<tbody>
<tr>
<td>GC9. - To intervene in the activities of promotion of health, prevention of disease, in the individual, familiar and community area with an integral and multiprofessional vision of the process health and disease.</td>
</tr>
<tr>
<td>GC13. - To develop skills of communication and information, both oral and written, to deal with patients and users of the center where it is developed the professional activity. To promote the capacities of work and collaboration in multidisciplinary teams and those related to other sanitary professionals.</td>
</tr>
<tr>
<td>GC15. - To recognize the own limitations and the need to support and update the professional competences, giving special importance to the autolearning of new knowledge being based on the scientific available evidence.</td>
</tr>
<tr>
<td>EC47. - To know and to understand the structure and function of the human body, as well as the general mechanisms of the disease, molecular, structural and functional alterations and therapeutic tools to restore the health.</td>
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| OBJECTIVES (EXPRESSED AS EXPECTED LEARNING OUTCOMES) |
The above mentioned objectives in this area are focused in bringing knowledge to the future pharmacist on the functioning of the human organism. In order to get it would be essential:

- To understand the physiological processes, analyzing their biological meaning, description, regulation and integration at different levels of organization: cell, organ and body systems in health.
- To establish the basis for understanding the physiological adaptation process taking place facing a continuously changing environment.

**DETAILED SYLLABUS**

**Theory program**

1. Peripheral organisation of the autonomic nervous system
2. Central organization of the autonomic nervous system
3. Body Fluids. The blood
4. Physiology of the erythrocyte and leukocyte
5. Platelet physiology and hemostasis
6. Functional anatomy of the heart. Myocardial properties. Electrocardiogram
7. Cardiac cycle. Cardiac output and factors affecting it
8. Arterial and venous circulation
10. Cardiovascular regulation.
12. Exchange and transport of respiratory gases
13. Regulation of respiration
14. Structure and function of the excretory system. The nephron
15. Mechanisms of urine formation
6. Regulation of renal function
17. Regulation of acid-base balance
18. Functional structure of digestive tract. Gut motility
19. Composition, function and regulation of digestive secretions
20. Digestion and absorption
21. Functions of the male reproductive and hormonal systems
22. Female physiology before pregnancy and female hormones
23. Physiology of fertilization, pregnancy, birth and lactation
24. Thermoregulation
25. Integumentary system. Physiology of the skin and related structures.
26. General adaptation syndrome

Laboratory practice program
Practice 1. - Microscopy study of cell components of the blood (functional description)
Practice 2. - Cardiovascular Physiology (simulated). Electrocardiogram
Practice 3. - Measurement of arterial blood pressure in humans and its computer simulation
Practice 5. - Physiology of the renal system (simulated)
Practice 6. - Physical and chemical processes of digestion (simulated)
Practice 7. - Measurement of glucose uptake. Intestinal perfusion
Practice 8. - Physiology of the Reproductive System: Hormone replacement therapy (simulated)

Each academic year, a selection of the above list will be performed at the physiology laboratory.

BIBLIOGRAPHY

BASIC READING LIST

- COSTANZO, L. S. “Fisiología”. 5a edición. Barcelona: Elsevier Saunders,
2014.


COMPLEMENTARY READING . Printed Journals
**TEACHING METHODOLOGY**

The contents of the programme will be developed through a combination of teaching techniques.

**Theoretical classes**
The theoretical topics will be presented in the classic way by means of master classes on the different sections that make up the subject.

A proposal will be made for sources of consultation (texts, published works, specialized magazines, web page addresses, etc.), in which to search for information for the various themes of the programme.

Seminars and other continuing education activities:

Classroom exposure to topics prepared by students. The topics will be distributed among the students sufficiently in advance so that they can prepare them and be supervised by the teacher before the exhibition, during which the discussion among the students will be encouraged, with the subject teacher acting as moderator.

The study, comment and discussion of practical cases related to Physiology of specific systems and organs.

To carry other activities of autonomous work and, in general, activities of continuous evaluation.

The use of the teaching platform of the University of Granada is recommended.

**Tutorials:**

Periodic meetings in specific tutorials where doubts raised by students are resolved.

**Practical classes:**

It is an indispensable condition to have approved the laboratory practices in order to pass the course. The practices will be of one-off call. Students who do not attend for a justified reason must inform the internship coordinator immediately.

Practical lessons will be given in the laboratories of the Physiology Department in the morning or afternoon and will be announced on the notice board of the Department, according to the schedule proposed by the Faculty.
The professor will explain and carry out the practice for a small group of students, then each student will carry out the practice individually supervised by the professor and will complete the different activities proposed in the practice notebook. At the end, the student will hand in the notebook with the results obtained individually, as well as will collect the different experimental observations. This notebook will be corrected by the teacher and returned to the student with the corresponding grade.

### ASSESSMENT (ASSESSMENT INSTRUMENTS, CRITERIA AND PERCENTAGE VALUE OF FINAL OVERALL MARK, ETC.)

#### EVALUATION INSTRUMENTS

In accordance with the Regulations for the Evaluation and Qualification of Students of the Universidad de Granada ([https://www.ugr.es/sites/default/files/2017-09/examenes.pdf](https://www.ugr.es/sites/default/files/2017-09/examenes.pdf)), "students enrolled at the Universidad de Granada will be entitled to two calls for evaluation, one ordinary and one extraordinary, per subject and academic year, which will take place on the dates scheduled by the Centres in accordance with the periods established in the official academic calendar".

The following forms of evaluation are established:

1. **ORDINARY CALL**

   In order to evaluate the contents of the course, periodic evaluation controls will be carried out on dates set by the Faculty in coordination with the rest of the 2nd year courses. Before the date of each control, the teacher will explain in class the type of exam.

   There will also be an evaluation of the seminars and other continuous training activities, as well as regular attendance, making the most of the face-to-face activities programmed throughout the course.

   In order to pass the course it will be essential to have passed the laboratory practices and the theory controls.

   The assignment of points in the evaluation system will be done according to the percentages:

   - Theoretical content (control and final): 70%.
   - Attendance at classes, seminars and other continuing education activities: 20%.
   - Performance of laboratory practices: 10%.

#### EVALUATION CRITERIA

**Evaluation of the theoretical contents:**

Students will be evaluated continuously throughout the four-month period by means of a maximum of two tests, including the final exam (within or outside class hours), which may be eliminatory of subject matter.

The subject will be eliminated, until the ordinary call, provided that the controls have a mark equal to or higher than 5 points. Theoretical subjects will account for 70% of the final mark.

**Evaluation of the seminars, work done and presented by the students or other continuous assessment activities:**

The tasks will be distributed among the students and the approximate date of their presentation in class will be set. Each work will be evaluated in terms of its content, presentation and defence of the subject. The content of the work and continuous assessment tests will also form part of the subject to be evaluated in the written tests. Attendance to class, completion of assignments and continuous assessment activities is compulsory for students and will account for 20% of the final mark.
Evaluation of laboratory practices:

In order to evaluate the practices the students must present a notebook with the results obtained during the practices and must pass a practical exam.

The practical exam will consist of carrying out one of the studied practices chosen at random (30% of the grade) and answering questions formulated by the professor about the different practices carried out (40% of the grade) and, finally, the qualification obtained in the practice notebook (30%).

Practical subjects will be 10% of the final grade of the course. Students who do not pass the internship may opt for a new internship exam to be taken before or at the same time as the theoretical exam of officially call.

2. EXTRAORDINARY CALL

Students who have not passed the course in the ordinary call will have an extraordinary call. Students will always take a theory exam which will be assessed at over 70%. In the rest of the sections (practice marks, seminars, continuous assessment activities, etc.) the students will be able to keep their mark for the course. The final mark will be the one obtained by applying the same criteria specified in the ordinary call.

In this call, students will have the possibility of obtaining 100% of the final grade.

DESCRIPTION OF THE EXERCISES WHICH WILL CONSTITUTE SINGLE FINAL ASSESSMENT AS ESTABLISHED IN UGR REGULATIONS

According to the Regulations for the evaluation and qualification of students of the University of Granada

Consolidated text of the Regulations approved by Agreement of the Governing Council of 20 May 2013 (BOUGR no. 71, of 27 May 2013) and amended by the Agreements of the Governing Council of 3 February 2014 (BOUGR no. 78, of 10 February 2014); of 23 June 2014 (BOUGR no. 83, 25 June 2014) and 26 October 2016 (BOUGR No. 112 of 9 November 2016); includes the corrections of 19 December 2016 and 24 May 2017


1. The final single evaluation, understood as that carried out in a single academic act, may include as many tests as are necessary to accredit that the student has acquired all the competences described in the Teaching Guide for the subject.

2. In order to benefit from the final single evaluation, the student, in the first two weeks of the course, or in the two weeks following the registration if it has taken place after the beginning of the course, will request it, through the electronic procedure, to the Director of the Department or to the Coordinator of the Master’s Degree, alleging and accrediting the reasons for not being able to follow the system of continuous evaluation. In the case of degree courses taught jointly by several Departments, students will request this from any of the Departments involved. The Director of the Department or the Coordinator of the Master’s Degree to which the request was addressed, after hearing the faculty members responsible for the subject, will decide on the request within ten working days.

After this period has elapsed without the student having received an express written response, the request will be understood to have been granted. In the event of a refusal, the student may, within one month, lodge an appeal with the Rector, who may delegate it to the Dean or Director of the Centre or to the Director of the International Graduate School, as appropriate, exhausting the administrative channels.

Notwithstanding the above, for exceptional and justified reasons (work reasons, state of health, disability, mobility programs, representation or any other similar circumstance), the final single evaluation may be requested outside the aforementioned deadlines, under the same administrative procedure.

Therefore, the allocation of points in the FCH II final single evaluation system will be done according to the following
percentages: Theoretical classes: 90% Practical classes: 10%, with the following specifications:

- Evaluation of the theoretical contents: Students will be evaluated by means of a final exam that proves that the student has acquired all the competences described in the teaching guide.

- Evaluation of laboratory practices. The students will have to pass a practical exam that will consist of carrying out one of the practices included in the Department practice booklet chosen at random and answering questions asked by the teacher about the different practices and the evaluation of the practice booklet. The internship grade will be 10% of the final grade.

ADDITIONAL INFORMATION
A minimum score of 5 out of 10 in both theoretical and practical teaching will be an indispensable condition for passing the course, both in the continuous assessment and in the only final. In no case will the grades obtained in the continuous evaluation in the sections of work realization and exposition, assistance with achievement or any other evaluable component that appears in the teaching guide, serve to approve the course and will only contribute to the final qualification of the same one once approved the theoretical and practical parts.

The teaching methodology and evaluation will be adapted to students with specific needs (NEAE), in accordance with Article 11 of the Regulations for the Evaluation and Qualification of Students of the University of Granada, published in the Official Journal of the University of Granada on 9 November 2016.

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**SCENARIO A (ON-CAMPUS AND REMOTE TEACHING AND LEARNING COMBINED)**

<table>
<thead>
<tr>
<th>TUTORIALS</th>
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<tbody>
<tr>
<td><strong>TIMETABLE</strong></td>
</tr>
<tr>
<td>(According to Official Academic Organization Plan)</td>
</tr>
<tr>
<td>The tutoring and attention to the students, both individually and collectively, will be carried out in person or by telematic means at the time established for this in this guide (prior appointment is recommended).</td>
</tr>
</tbody>
</table>

| TOOLS FOR TUTORIALS |
| (Indicate which digital tools will be used for tutorials) |
| • Videoconference (Google Meet or Zoom) |
| • E-mail |
| • PRADO forums |
| • Teaching communications |

**MEASURES TAKEN TO ADAPT TEACHING METHODOLOGY**

- Royal Decree-Law 21/2020, of June 9, on urgent measures of prevention, containment and coordination to face the health crisis caused by COVID-19, establishes in its article 9 that in educational centers, including University students must guarantee the adoption of organizational measures, avoid crowds and ensure that a safety distance is maintained, maintaining on campus teaching.

- In the event that in the classroom it is possible to maintain a safety distance of at least 1.5 meters between the occupants, the sessions will be entirely in-person.

- When it is not possible to maintain this safety distance, adequate hygiene measures will be observed to
prevent the risks of contagion. If it is not possible to maintain social distance in the classrooms, each theory group will be divided in two and on campus teaching will be given in alternate weeks to each subgroup while the other subgroup receives teaching via streaming.

- In relation to experimental teaching, the explanation of the theoretical foundations may be taught online, while for the practical part, the groups will be subdivided to be carried out through in-person teaching in the laboratory. Safety and hygiene measures will be maintained.
- For practical teaching, the explanation of the theoretical foundations may be taught online, while the practical part will subdivide the groups to do it in person in the laboratory, keeping the distance of safety and hygiene measures.

### MEASURES TAKEN TO ADAPT ASSESSMENT
(Instruments, criteria and percentage of final overall mark)

#### Ordinary assessment session

During the 2020-2021 academic year, as indicated in the Regulations for the evaluation and qualification of students of the University of Granada (article 6, point 2), the evaluation will preferably be by a continuous assessment method.

- The final evaluation tests of the subjects that were foreseen in the teaching guide will preferably be carried out as face-to-face assessment, taking into account the level of occupation of the space authorized by the health authorities.
- The non-face-to-face assessment tests will include mechanisms for guaranteeing their authorship by the students. In any case, adequate legal and security guarantees will always be preserved. Respect for the fundamental rights to intimacy and privacy will be observed, according to the principle of proportionality.

#### Extraordinary assessment session

Same measures as in the adaptation of the evaluation in ordinary call will apply.

#### Single final assessment

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### SCENARIO B (ONCAMPUS ACTIVITY SUSPENDED)

#### TUTORIALS

<table>
<thead>
<tr>
<th>TIMETABLE (According to Official Academic Organization Plan)</th>
<th>TOOLS FOR TUTORIALS (Indicate which digital tools will be used for tutorials)</th>
</tr>
</thead>
</table>
| The tutorials are given at the same times that it was done in person. Exceptionally, when this is not possible, the students will have meetings in a new schedule from 2:30 p.m. or 7:00 p.m. In addition, emails are attended to students at any time, for specific questions. | • Videoconference (Google Meet or Zoom)  
• E-mail  
• PRADO forums  
• Teaching communications |

### MEASURES TAKEN TO ADAPT TEACHING METHODOLOGY

**Theoretical Teaching:** classes are held on-line synchronous videoconference through the Google Meet or Zoom
platform at the same times that they had been taught in person.

**Practical Teaching:** students are called through PRADO or teaching communication and a Google Meet link is created to teach these practices.

The use of the PRADO teaching platform with support material for theory, practices and activities for monitoring continuous assessment. Is recommended.

**MEASURES TAKEN TO ADAPT ASSESSMENT** (Instruments, criteria and percentage of final overall mark)

### Ordinary assessment session

- **Theoretical Teaching:**
  Online questionnaires through the PRADO-EXAMEN platform.
  Online questions according to the PRADO-EXAMEN exam modality. The questions are ordered sequentially without being able to go back. The questions are elaborated and carried out through PRADO-EXAMEN. The allocation of points in the evaluation system will be made according to the percentages: 70% of the final grade will be the theoretical exam, 10% the practices and 20% continuous evaluation activities + seminars.

- **Practical Teaching:**
  Online questionnaires through the PRADO-EXAMEN platform.
  It will consist of a test (60% of the grade with a structure similar to the theory exam) and the questions from the practical notebook adapted to the new teaching methodology (40% of the grade) that is sent to students in a single file, through PRADO or teaching communication.

  Students who have not completed or have not passed the practices will be called for a practice exam on the day of the theory exam.

To evaluate both theoretical and practical teaching in the event of a specific connection failure affecting a few students, another time will be agreed on the same day. In case it fails again, another day will be agreed in the form of individualized online oral test.

### Extraordinary assessment session

- **Online questionnaires through the PRADO-EXAMEN platform**
  Online questions according to the PRADO-EXAMEN exam modality. The questions are ordered sequentially without being able to go back. The questions are elaborated and carried out through PRADO-EXAMEN.

  To evaluate both theoretical and practical teaching in the event of a connection failure, another time will be agreed on the same day. In case it fails again, another day will be agreed in the form of individualized online oral test.

  Students who have not completed or have not passed the practices will be called for a practice exam on the day of the theory exam.

  Students will always take a theory test that will be evaluated over 70%. In relation to the rest of the sections, the students will be able to keep their mark (practices, seminar and continuous evaluation questions). The final qualification will be obtained by applying the same criteria specified in the ordinary call.

  To evaluate both theoretical and practical teaching in the event of a specific connection failure affecting a few students, another time will be agreed on the same day. In case it fails again, another day will be agreed in the form of individualized online oral test.
Single final assessment

- Online questionnaires through the PRADO-EXAMEN platform
  The questions are ordered sequentially without being able to go back. The questions are elaborated and carried out through PRADO-EXAMEN. A Google Meet or Zoom session could also be used.

The distribution of points in the final qualification will be done according to the principles:

- Students will be called for a practical exam on the day of the theoretical exam (10% of the final grade).
- Evaluation of theoretical contents will be 90%: students will be evaluated by taking a final exam that proves that the student has acquired the completeness of the skills described in the teaching guide.
- To evaluate both theoretical and practical teaching in the event of a specific connection failure affecting a few students, another time will be agreed on the same day. In case it fails again, another day will be agreed in the form of individualized online oral test.

ADDITIONAL INFORMATION (if necessary)

In the event of suspension of on campus teaching, the students of the single final evaluation may request to join virtual teaching, since the difficulties they claimed to not follow the continuous evaluation will have disappeared.