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1. DATOS BÁSICOS

Asignatura	Módulo 2: Nutrición y Ayudas Ergogénicas
Titulación	Máster Universitario en Entrenamiento y Nutrición Deportiva
Escuela/ Facultad	Escuela Universitaria Real Madrid/Facultad Ciencias del Deporte
Curso	Primero
ECTS	10 ECTS
Carácter	Obligatorio
Idioma/s	Castellano
Modalidad	Presencial
Semestre	Anual
Curso académico	2019/2020
Docente coordinador	Dr. SERGIO LORENZO JIMENEZ SAIZ/NOELIA BONFANTI

2. PRESENTACIÓN

“Nutrición y Ayudas Ergogénicas” es uno de los principales módulos del programa en cuanto a volumen de contenidos, con un valor de 10 ECTS. En este módulo se incluyen todos los contenidos relacionados con la nutrición y el deporte como hidratación en relación con la práctica deportiva, los macronutrientes en el deporte, la importancia de los micronutrientes, trastornos de comportamiento alimentario, relación endocrino-metabólico e inmunológico alterado en respuesta a la práctica deportiva a diferentes niveles de intensidad, así como los conocimientos para la realización de una planificación y organización de la dieta del deportista y la realización de un análisis de la composición corporal y del somatotipo del deportista basado en la toma de pliegues, registro del peso corporal, medida de diferentes alturas, diámetros y perímetros.

La calificación de este módulo está compuesta por prácticas en el laboratorio, trabajo en grupo y examen tipo test.

3. COMPETENCIAS Y RESULTADOS DE APRENDIZAJE

Competencias básicas:

- *CB1. Poseer y comprender conocimientos que aporten una base u oportunidad de ser originales en el desarrollo y/o aplicación de ideas, a menudo en un contexto de investigación.*

- *CB2. Que los estudiantes sepan aplicar los conocimientos adquiridos y su capacidad de resolución en entornos nuevos o poco conocidos dentro de contextos más amplios (o multidisciplinares) relacionados con su área de estudio.*
- *CB3. Que los estudiantes sean capaces de integrar conocimientos y enfrentarse a la complejidad de formular juicios a partir de una información que, siendo incompleta o limitada, incluya reflexiones sobre las responsabilidades sociales y éticas vinculadas a la aplicación de sus conocimientos y juicios.*
- *CB4. Que los estudiantes sepan comunicar sus conclusiones –y los conocimientos y razones últimas que las sustentan- a públicos especializados y no especializados de un modo claro y sin ambigüedades.*
- *CB5. Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.*

Competencias transversales:

- *CT1. Aprendizaje Autónomo: Habilidad para elegir las estrategias, las herramientas y los momentos que considere más efectivos para aprender y poner en práctica de manera independiente lo que ha aprendido.*
- *CT3. Capacidad para adaptarse a nuevas situaciones: ser capaz de valorar y entender posiciones distintas, adaptando el enfoque propio a medida que la situación lo requiera.*
- *CT4. Capacidad de análisis y síntesis: ser capaz de descomponer situaciones complejas en sus partes constituyentes; también evaluar otras alternativas y perspectivas para encontrar soluciones óptimas. La síntesis busca reducir la complejidad con el fin de entenderla mejor y/o resolver problemas.*
- *CT7. Responsabilidad: Capacidad para cumplir los compromisos que alcanza la persona consigo mismo y con los demás a la hora de realizar una tarea y tratar de alcanzar un conjunto de objetivos dentro del proceso de aprendizaje. Capacidad existente en todo sujeto para reconocer y aceptar las consecuencias de un hecho realizado libremente.*
- *CT9: Trabajo en equipo: Capacidad para integrarse y colaborar de forma activa con otras personas, áreas y/u organizaciones para la consecución de objetivos comunes.*

Competencias específicas:

- *CE2: Analizar y aplicar los principios fisiológicos, biomecánicos, psicológicos y sociales a los diferentes campos del deporte y la nutrición, identificando prácticas inadecuadas*

que supongan riesgo para la salud, con el fin de evitarlas y corregirlas en los diferentes tipos de población.

- CE3: Comprender y saber acceder a la documentación científica relacionada a las áreas del rendimiento humano y la nutrición deportiva.
- CE4: Interpretar investigaciones y aplicar las nuevas tecnologías en el ámbito del entrenamiento y la nutrición deportiva.
- CE5: Conocer la metodología y los procedimientos propios de la investigación científica en el ámbito del entrenamiento y la nutrición deportiva aplicados a todas las edades y niveles de rendimiento.
- CE6: Diseñar y desarrollar investigaciones en el ámbito del deporte y la nutrición, aportando nuevos conocimientos en algún área específica de interés científico y social, respetando los límites de la ética y de los valores.
- CE9: Diagnosticar el nivel de condición física, habilidad motriz y estado nutricional para poder diseñar programas de entrenamiento y elaborar consejos nutricionales aplicables a diferentes especialidades deportivas y niveles de rendimiento.
- CE11. Adquirir conocimiento de manera independiente (aprendizaje autónomo).

Resultados de aprendizaje:

- RA1. Detección de los fenómenos de deshidratación en relación con la práctica deportiva así como para recomendar las oportunas medidas de reposición hidro-electrolítica durante la práctica de ejercicio en condiciones ambientales de calor y humedad extremos.
- RA2. Identificación de las combinaciones más adecuadas de nutrientes, en calidad y cantidad, para la recuperación del equilibrio endocrino-metabólico e inmunológico alterado en respuesta a la práctica deportiva a diferentes niveles de intensidad.
- RA3. Realización de una planificación y organización de la dieta del deportista en función de sus necesidades específicas de mantenimiento, pérdida, ganancia de peso o como coadyuvante en la mejora de un proceso de enfermedad de origen cardio-metabólico.

- RA4. Identificación de deportistas que padecen trastornos del comportamiento alimentario e instrumentar la derivación de los mismos a otros profesionales (médicos, psicólogos) y prestación de ayuda especializada.
- RA5. Realización de un análisis de la composición corporal y del somatotipo del deportista basado en la toma de pliegues, registro del peso corporal, medida de diferentes alturas, diámetros y perímetros.
- RA6. Prescripción de diferentes ayudas ergogénicas naturales y suplementos nutricionales orientados a la mejora del rendimiento y recuperación del deportista.

En la tabla inferior se muestra la relación entre las competencias que se desarrollan en la asignatura y los resultados de aprendizaje que se persiguen:

Competencias	Resultados de aprendizaje
CB1, CB2, CB3, CB4, CB5 CT1, CT3, CT4, CT9. CE2, CE3, CE6, CE9, CE11.	RA1
CB1, CB2, CB3, CB4, CB5 CT1, CT7, CT9. CE2, CE3, CE4, CE9, CE11.	RA2
CB1, CB2, CB3, CB4, CB5 CT1, CT3, CT4, CE2, CE3, CE4, CE5, CE6.	RA3
CB1, CB2, CB3, CB4, CB5 CT4, CT7, CT9. CE2, CE5, CE6, CE9, CE11.	RA4
CB1, CB2, CB3, CB4, CB5 CT1, CT7, CT9. CE2, CE3, CE4, CE5, CE6.	RA5
CB1, CB2, CB3, CB4, CB5 CT1, CT3, CT4, CE3, CE4, CE5, CE6.	RA6

Para desarrollar las competencias y alcanzar los resultados de aprendizaje indicados, deberás realizar las actividades que se indican en la tabla inferior:

Resultados de aprendizaje	Actividad de aprendizaje	Tipo de actividad formativa	Contenidos
RA1 RA2 RA3 RA4 RA5 RA6	Fundamentos de la Nutrición Humana.	EXAMEN	UA 1

RA1, RA6	Nutrición, ejercicio y deporte.	Trabajo en grupo	UA2
RA1, RA2, RA4, RA6	Nutrición en poblaciones especiales.	Trabajo individual	UA 3
RA2, RA3, RA4, RA6	Prescripción organización de la dieta.	Trabajo en grupo	UA 4
RA5, RA6	Valoración de la composición corporal humana	Práctica laboratorio	UA 5
RA2; RA3, RA6	Ayudas ergogénicas aplicadas al deporte y la salud.	Trabajo en grupo	UA 6

4. CONTENIDOS

1. Anatomía y fisiología del aparato digestivo
2. Macronutrientes: hidratos de carbono, lípidos y proteínas
3. Micronutrientes: vitaminas y minerales
4. Reposición hidro-electrolítica: rehidratación y termorregulación en condicionales ambientales de temperatura y humedad extremas.
5. Análisis de los alimentos y tecnología de la alimentación.
6. Endocrinología del deporte: interacciones hormona-nutriente-ejercicio.
7. Inmunología del deporte.
8. Análisis de la composición corporal.
9. Entrevista nutricional y gasto calórico.
10. Nutrición en poblaciones especiales: patología cardiovascular y metabólica.
11. Dietas para subir y bajar de peso.
12. Trastornos del comportamiento alimentario en deportistas: anorexia, bulimia y vigorexia.
13. Ayudas ergogénicas naturales: mecanismos de acción, efectos biológicos y pautas de prescripción de suplementos nutricionales en el deporte.

5. METODOLOGÍAS DE ENSEÑANZA-APRENDIZAJE

A continuación, se indican los tipos de metodologías de enseñanza-aprendizaje que se aplicarán:

- Clase magistral.
- Método del caso.
- Aprendizaje cooperativo.
- Aprendizaje basado en problemas.
- Aprendizaje basado en proyectos.

6. ACTIVIDADES FORMATIVAS

A continuación, se identifican los tipos de actividades formativas que se realizarán y la dedicación en horas del estudiante a cada una de ellas:

Modalidad presencial:

Actividad formativa	Número de horas
Fundamentos de la Nutrición Humana.	25 horas 10 autónomas
Nutrición, ejercicio y deporte.	30 horas 15 autónomas
Nutrición en poblaciones especiales.	10 horas 20 autónomas
Prescripción organización de la dieta.	35 horas 20 autónomas
Valoración de la composición corporal humana	10 horas 15 autónomas
Ayudas ergogénicas aplicadas al deporte y la salud.	40 horas 20 autónomas
TOTAL	250 h

7. EVALUACIÓN

A continuación, se relacionan los sistemas de evaluación, así como su peso sobre la calificación total de la asignatura:

Sistema de evaluación	Peso
Actividades 1. Examen tipo test	25%
Actividad 2. Trabajo en grupo sobre micronutrientes y antioxidantes.	25%
Actividad 3. Trabajo en grupo sobre planificación de la dieta del deportista.	25%
Actividad 4. Trabajo individual sobre tipos de dieta. Vegana,....	25%
Actividad 5. Práctica en laboratorio sobre composición corporal	APTO/NO APTO

En el Campus Virtual, cuando accedas a la asignatura, podrás consultar en detalle las actividades de evaluación que debes realizar, así como las fechas de entrega y los procedimientos de evaluación de cada una de ellas.

7.1. Convocatoria ordinaria

Para superar la asignatura en convocatoria ordinaria deberás obtener una calificación mayor o igual que 5 sobre 10 en la calificación final

7.2. Convocatoria extraordinaria

Para superar la asignatura en convocatoria extraordinaria es necesario obtener una calificación mayor o igual que 5,0 sobre 10,0 en la calificación final de la asignatura. Se deben entregar las actividades no superadas en convocatoria ordinaria, tras haber recibido las correcciones

8. CRONOGRAMA

En este apartado se indica el cronograma con fechas de entrega de actividades evaluables de la asignatura:

Actividades evaluables	Fecha
Actividades 1. Examen tipo test	Enero
Actividad 2. Trabajo en grupo sobre micronutrientes y antioxidantes.	Enero
Actividad 3. Trabajo en grupo sobre planificación de la dieta del deportista.	Diciembre
Actividad 4. Trabajo individual sobre tipos de dieta. Vegana,....	Diciembre
Actividad 5. Práctica en laboratorio sobre composición corporal	Febrero

Este cronograma podrá sufrir modificaciones por razones logísticas de las actividades. Cualquier modificación será notificada al estudiante en tiempo y forma.

9. BIBLIOGRAFÍA

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10. UNIDAD DE ATENCIÓN A LA DIVERSIDAD

Estudiantes con necesidades específicas de apoyo educativo:

Las adaptaciones o ajustes curriculares para estudiantes con necesidades específicas de apoyo educativo, a fin de garantizar la equidad de oportunidades, serán pautadas por la Unidad de Atención a la Diversidad (UAD).

Será requisito imprescindible la emisión de un informe de adaptaciones/ajustes curriculares por parte de dicha Unidad, por lo que los estudiantes con necesidades específicas de apoyo educativo deberán contactar a través de: unidad.diversidad@universidadeuropea.es al comienzo de cada semestre.

1. BASIC INFORMATION

Subjet	Module 2: Nutrition and Ergogenic Aids
Master Program	Master's Degree in Sports Training and Nutrition
School	Real Madrid Graduate School/School of Sports Sciences
Course	First
ECTS	10 ECTS
Modality	Mandatory
Language	English
Delivery Mode	Campus-Based
Semester	Annual
Academic Year	2019/2020
Coordinating professor	Dr. SERGIO LORENZO JIMENEZ SAIZ/NOELIA BONFANTI

2. PRESENTATION

“Nutrition and Ergogenic Aids” is one of the principal modules of the program as regards volume of content, and is worth 10 ECTS. This module includes all the content related to nutrition and sports, such as hydration in relation to playing sports, macronutrients in sports, the importance of micronutrients, eating disorders, endocrine-metabolic relationship and altered immune regulation in response to sporting activity at different levels of intensity. It also addresses how to plan and organize a sportsperson’s diet, as well as analyze their body composition and somatotype based on measurement of skinfolds, body weight, and different heights, diameters and perimeters.

The grade for this module comprises lab practice, group work and a multiple-choice exam.

3. COMPETENCIES AND LEARNING OUTCOMES

Core competencies:

- *CB1. Students should possess and understand knowledge that provides a basis or opportunity to be innovative in the development and/or application of ideas, often in a research context.*

- *CB2. Students should be able to apply their acquired knowledge and problem-solving ability in new or little-known environments within broader (or multidisciplinary) contexts related to their area of study.*
- *CB3. Students should be able to integrate knowledge and tackle the complexity of formulating judgements based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities related to the application of their knowledge and judgements.*
- *CB4. Students should be able to communicate their conclusions –and the ultimate reasons that support them– to specialized and non-specialized audiences in a clear and unambiguous way.*
- *CB5. Students should possess learning skills that allow them to continue studying in a largely self-directed or autonomous way.*

Cross-curricular competencies:

- *CT1. Self-learning skills:* being able to choose the most effective strategies and tools at the most appropriate time to learn and autonomously put our learning into practice.
- *CT3. Capacity to adapt to new situations:* being able to assess and understand different situations, adapting our own approach insofar as is necessary or appropriate.
- *CT4. Analysis and synthesis skills:* being able to break down complex situations into their constituent parts, as well as to assess other alternatives and approaches in order to find the best solutions. Synthesis seeks to reduce complexity in order to facilitate understanding and/or problem solving.
- *CT7. Responsibility:* being able to fulfill the commitments a person makes to themselves and to others when performing a task and trying to achieve a set of goals as part of the learning process. The ability of any individual to acknowledge and accept the consequences of their own actions.
- *CT9: Teamwork: being able* to participate and cooperate actively with other people, areas and/or organizations in order to achieve common goals.

Specific competencies:

- *CE2: Analyzing and applying physiological, biomechanical, psychological and social principles to different sporting fields and nutrition, identifying unsuitable practices that represent a health risk, in order to avoid them and correct them in the different types of population.*

- CE3: Understanding and knowing how to access scientific documentation related to the areas of human performance and sports nutrition.
- CE4: Interpreting research and applying new technologies in the field of training and sports nutrition.
- CE5: Knowing the methodology and procedures involved in scientific research in the field of training and sports nutrition applied to all ages and performance levels.
- CE6: Designing and carrying out research in the field of sports and nutrition, contributing new knowledge in a specific area of scientific and social interest, respecting ethical limits and values.
- CE9: Diagnosing level of physical fitness, motor skills and nutritional health in order to be able to design training programs and provide nutritional advice applicable to different sporting specialties and performance levels.
- CE11. Acquiring knowledge independently (self-learning).

Learning outcomes:

- RA1. Detection of dehydration phenomena in relation to sporting activity, and recommending appropriate measures for reestablishing hydro-electrolytic balance while exercising in extreme heat and humidity.
- RA2. Identification of the most suitable combinations of nutrients, in quality and quantity, for restoring endocrine-metabolic balance and altered immune regulation in response to sporting activity at different levels of intensity.
- RA3. Planning and organizing a sportsperson's diet according to their specific weight maintenance/loss/gain needs, or to help improve an illness process of cardio-metabolic origin.
- RA4. Identifying sportspeople who suffer from eating disorders and referring them to other professionals (doctors, psychologists) for specialized help.
- RA5. Performing an analysis of a sportsperson's body composition and somatotype based on measurement of skinfolds, body weight, and different heights, diameters and perimeters.
- RA6. Prescribing different natural ergogenic aids and nutritional supplements aimed at improving a sportsperson's performance and recovery.

The table below shows the relationship between the competencies developed in the course and the learning outcomes pursued:

Competencies	Learning outcomes
CB1, CB2, CB3, CB4, CB5 CT1, CT3, CT4, CT9. CE2, CE3, CE6, CE9, CE11.	RA1
CB1, CB2, CB3, CB4, CB5 CT1, CT7, CT9. CE2, CE3, CE4, CE9, CE11.	RA2
CB1, CB2, CB3, CB4, CB5 CT1, CT3, CT4, CE2, CE3, CE4, CE5, CE6.	RA3
CB1, CB2, CB3, CB4, CB5 CT4, CT7, CT9. CE2, CE5, CE6, CE9, CE11.	RA4
CB1, CB2, CB3, CB4, CB5 CT1, CT7, CT9. CE2, CE3, CE4, CE5, CE6.	RA5
CB1, CB2, CB3, CB4, CB5 CT1, CT3, CT4, CE3, CE4, CE5, CE6.	RA6

4. COURSE CONTENT

1. Anatomy and physiology of the digestive system.
2. Macronutrients: carbohydrates, lipids, and proteins.
3. Micronutrients: vitamins and minerals.
4. Reestablishing hydro-electrolytic balance: rehydration and thermoregulation in extreme heat and humidity.
5. Food analysis and food technology.
6. Sports endocrinology: hormone-nutrient-exercise interactions.
7. Exercise immunology.
8. Body composition analysis.
9. Nutrition and caloric expenditure interview.
10. Nutrition in special populations: cardiovascular and metabolic pathology.
11. Diets for gaining or losing weight.

12. Eating disorders in sportspeople: anorexia, bulimia, and muscle dysmorphia.
13. Natural ergogenic aids: action mechanisms, biological effects, and guidelines for prescribing nutritional supplements in sports.

5. LEARNING METHODOLOGIES

The types of teaching methodologies are listed below:

- Master Class
- Case Method
- Cooperative learning
- PBL

6. ASSESSABLE ACTIVITIES

Next, the types of training activities that will be carried out and the student's dedication to each of them are identified:

Assessable activity	Hours
Fundamentals of human nutrition	25 hours 10 self-directed
Nutrition, exercise and sports	30 hours 15 self-directed
Nutrition in special populations	10 hours 20 self-directed
Prescription and organization of diet	35 hours 20 self-directed
Assessment of human body composition	10 hours 15 self-directed
Ergogenic aids applied to sports and health	40 hours 20 self-directed
TOTAL	250 h

7. ASSESSMENT

The following table shows the assessable activities, their respective assessment criteria, and the weight each activity carries towards the final course grade.

Assessable activity	Weight (%)
Activity 1. Multiple-choice exam	25%

Activity 2. Group work on micronutrients and antioxidants.	25%
Activity 3. Group work on planning a sportsperson's diet.	25%
Activity 4. Individual work on types of diet. Vegan, etc.	25%
Activity 5. Lab practice on body composition	PASS or FAIL

When you access the course on the *Campus Virtual*, you'll find a description of the activities you have to complete, as well as the deadlines and assessment procedures for each one

7.1. First exam period

To pass the course in the first exam period, you must obtain a final course grade of at least 5 out of 10.

7.2. Second exam period

To pass the course in the second exam period, you must obtain a final grade of at least 5 out of 10. The student must deliver the activities not successfully completed in the first exam period after having received the corresponding corrections from the professor, or those that were not delivered in the first place.

8. SCHEDULE

This section indicates the schedule with delivery dates of evaluable activities of the subject:

Assessable activity	Date
Assessable activity	January
Activity 1. Multiple-choice exam	January
Activity 2. Group work on micronutrients and antioxidants.	December
Activity 3. Group work on planning a sportsperson's diet.	December
Activity 4. Individual work on types of diet. Vegan, etc.	February

This schedule may undergo modifications for logistical reasons of the activities. Any modification will be notified to the student in a timely manner.

9. BIBLIOGRAPHY

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10. DIVERSITY ATTENTION UNIT

Students with specific educational support needs:

Adaptations or curricular adjustments for students with specific educational support needs, in order to guarantee equal opportunities, will be guided by the Diversity Attention Unit (UAD).

The issuance of a report of curricular adaptations / adjustments by said Unit will be essential, so students with specific educational support needs should contact through: unidad.diversidad@universidadeuropea.es at the beginning of each semester