



Máster Universitario en
Física: Radiaciones,
Nanotecnología,
Partículas y Astrofísica

Course contents - academic year 2020/2021

Compulsory Subjects

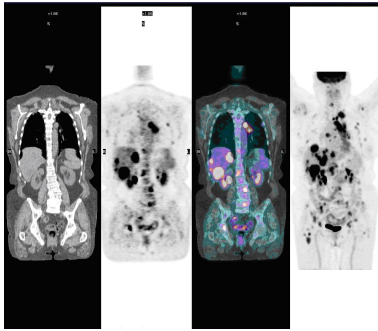
Common Module (18ECTS)

| SUBJECT | ECTS | LECTURERS |
|---|------|---|
| (1) SUPPLEMENTARY MATHEMATICS AND PHYSICS | 6 | ARIAS DE SAAVEDRA ALIAS, FERNANDO (ECTS: 2) GARCÍA RECIO, CARMEN (ECTS: 2) PORTI DURÁN, JORGE ANDRÉS (ECTS: 2) |
| (2) APPROXIMATION METHODS IN PHYSICS | 3 | MASIP MELLADO, MANUEL (ECTS: 3) |
| (3) ELECTRONIC MICROSCOPY AND CHARACTERIZATION TECHNIQUES | 3 | VEREDA MORATILLA, FERNANDO (ECTS: 1) SÁNCHEZ ALMAZO, ISABEL (ECTS: 1.33) ABAD ORTEGA, MARÍA DEL MAR (ECTS: 1.33) LINARES ORDOÑEZ, FÁTIMA (ECTS: 1.34) |
| (4) DATA ANALYSIS | 3 | BLANCO NAVARRO, DAVID (ECTS: 1.5) CARRIÓN PÉREZ, MARÍA CARMEN (ECTS: 1.5) |

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| (5) INVITED LECTURERS | 3 | |
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Master Thesis (12ECTS)

| SUBJECT | ECTS | LECTURERS |
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| (6) MASTER THESIS | 12 | |



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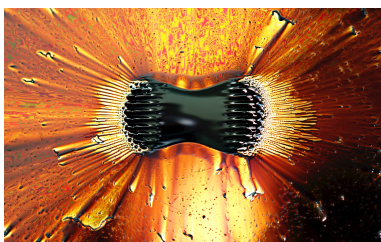
Whole body PETCT scan with diffuse mets. Author: Myo

Han [fuente]

Physics and Technology of Radiations (48ECTS)

| SUBJECT | ECTS | LECTURERS |
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| (7) MEDICAL AND INDUSTRIAL APPLICATIONS OF RADIATIONS | 6 | ANGUIANO MILLÁN, MARTA (ECTS: 5) GONZÁLEZ INFANTES, WILFREDO (ECTS: 1) |
| (8) RADIATION DETECTION AND DOSIMETRY | 6 | AMARO SORIANO, JOSÉ ENRIQUE (ECTS: 2) GARCÍA PAREJA, SALVADOR (ECTS: 1) GÁLVEZ CIFUENTES, FRANCISCO JAVIER (ECTS: 2) TAIN ENRÍQUEZ, JOSÉ LUIS (ECTS: 1) |

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| (9) RADIATION-MATTER INTERACTION | 6 | LALLENA ROJO, ANTONIO MIGUEL (ECTS: 3) GARCÍA PAREJA, SALVADOR (ECTS: 1) PORRAS SÁNCHEZ, JOSÉ IGNACIO (ECTS: 1) SALVAT GAVALDÁ, FRANCESC (ECTS: 1) |
| (10) RADIOBIOLOGY | 6 | LALLENA ROJO, ANTONIO MIGUEL (ECTS: 1) GUIRADO LLORENTE, DAMIÁN (ECTS: 3.5) DE LA VEGA FERNANDEZ, JOSE MANUEL (ECTS: 1.5) |
| (11) LASER PHYSICS AND APPLICATIONS | 6 | BUENDÍA ÁVILA, ENRIQUE (ECTS: 2) RODRÍGUEZ RUBIALES, DANIEL (ECTS: 4) |
| (12) NEW DEVELOPMENTS IN QUANTUM PHYSICS | 6 | BOSCA DÍAZ-PINTADO, MARÍA CRUZ (ECTS: 4) GARCÍA RECIO, CARMEN (ECTS: 2) |
| (13) RADIATIVE PROCESSES IN ATOMS AND NUCLEI | 6 | AMARO SORIANO, JOSÉ ENRIQUE (ECTS: 2) BUENDÍA ÁVILA, ENRIQUE (ECTS: 2) GÁLVEZ CIFUENTES, FRANCISCO JAVIER (ECTS: 2) |
| (14) NUCLEAR TECHNOLOGY | 6 | IBARRA SÁNCHEZ, ÁNGEL (ECTS: 1) PORRAS SÁNCHEZ, JOSÉ IGNACIO (ECTS: 3) PRAENA RODRÍGUEZ, JAVIER (ECTS: 2) |



Ferrofluid collects near the poles of a powerful magnet.

Author: Gregory F. Maxwell

Nanotechnology: Physics and Applications (48ECTS)

| SUBJECT | ECTS | LECTURERS |
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| (15) DESIGN AND CHARACTERIZATION OF NANOMATERIALS | 6 | AHUALLI YAPUR, SILVIA ALEJANDRA* (ECTS: 2) DELGADO MORA, ÁNGEL VICENTE (ECTS: 2) LÓPEZ LÓPEZ, MODESTO TORCUATO (ECTS: 2) *PROPOSAL OF LECTURER PENDING OF VALIDATION |
| (16) NANOSTRUCTURED FLUIDS. RHEOLOGICAL PROPERTIES | 6 | GARCÍA LÓPEZ- DURÁN, JUAN DE DIOS (ECTS: 2) VICENTE ÁLVAREZ- MANZANEDA, JUAN DE (ECTS: 3) LÓPEZ LÓPEZ, MODESTO TORCUATO (ECTS: 1) |
| (17) COLLOIDS AND INTERFACES: APPLICATION TO NANOSYSTEMS WITH BIOTECHNOLOGOLOGICAL INTEREST | 6 | MALDONADO VALDERRAMA, JULIA (ECTS: 2) MARTÍN MOLINA, ALBERTO (ECTS: 2) BASTOS GONZÁLEZ, DELFINA (ECTS: 2) |

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| (18) PHYSICAL PROPERTIES OF MATERIALS. SCALE EFFECTS | 6 | CALLEJAS FERNÁNDEZ, JOSÉ (ECTS: 2) JIMÉNEZ OLIVARES, MARÍA LUISA (ECTS: 2) MONCHO JORDÁ, ARTURO (ECTS: 2) |
| (19) CHARACTERIZATION, SIMULATION AND MODELING OF ELECTRONIC NANODEVICES | 6 | GÁMIZ PÉREZ, FRANCISCO JESÚS (ECTS: 2) JIMÉNEZ TEJADA, JUAN ANTONIO (ECTS: 2) ROLDÁN ARANDA, JUAN BAUTISTA (ECTS: 2) |
| (20) OPTOELECTRONIC NANODEVICES | 6 | DONETTI, LUCA (ECTS: 3) GODOY MEDINA, ANDRÉS (ECTS: 3) |
| (21) NANOSTRUCTURES FOR ENERGY GENERATION AND STORAGE | 6 | GÓMEZ CAMPOS, FRANCISCO MANUEL (ECTS: 4) TIENDA LUNA, ISABEL MARÍA (ECTS: 2) |
| (22) PHOTONICS. OPTICAL INSTRUMENTATION AND APPLICATIONS | 6 | HITA VILLAVERDE, ENRIQUE (ECTS: 2) PÉREZ OCÓN, FRANCISCO DE ASÍS (ECTS: 2) POZO MOLINA, ANTONIO MANUEL (ECTS: 2) |



Star cluster Westerlund 2. Author: NASA/ESA, Hubble

Space Telescope [source]

Physics of Particles and Astrophysics (48ECTS)

| SUBJECT | ECTS | LECTURERS |
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| (23) ASTROBIOLOGY AND EXTRA-SOLAR PLANETS | 6 | GARCÍA HERNÁNDEZ, ANTONIO (ECTS: 2)* LOPEZ PUERTAS, MANUEL (ECTS: 1) LÓPEZ VALVERDE, MIGUEL ANGEL (ECTS: 1) *PROPOSAL OF LECTURER PENDING OF VALIDATION |
| (24) ASTROPARTICLES | 6 | BUENO VILLAR, ANTONIO (ECTS: 3) GARCÍA GÁMEZ, DIEGO (ECTS: 3)* *PROPOSAL OF LECTURER PENDING OF VALIDATION |
| (25) COSMOLOGY AND GALAXIES | 6 | ALFARO NAVARRO, EMILIO (ECTS: 2) BASTERO GIL, MAR (ECTS: 4) |
| (26) ORIGIN AND EVOLUTION OF THE CHEMICAL ELEMENTS IN THE UNIVERSE | 6 | ABIA LADRÓN DE GUEVARA, CARLOS ANTONIO (ECTS: 2) DOMÍNGUEZ AGUILERA, MARÍA INMACULADA (ECTS: 3) VILCHEZ MEDINA, JOSÉ MANUEL (ECTS: 1) |

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| (27) PHYSICS OF DETECTORS | 6 | IGLESIAS PARAMO, JORGE (ECTS: 2) NAVAS CONCHA, SERGIO (ECTS: 4) |
| (28) PHYSICS BEYOND THE STANDARD MODEL | 6 | SANTIAGO PÉREZ, JOSÉ (ECTS: 3) CARMONA BERMÚDEZ, ADRIÁN (ECTS: 3) |
| (29) STANDARD MODEL | 6 | GÁMIZ SÁNCHEZ, MARÍA ELVIRA (ECTS: 2) ILLANA CALERO, JOSÉ IGNACIO (ECTS: 4) |
| (30) QUANTUM FIELD THEORY | 6 | PÉREZ VICTORIA MORENO DE BARREDA, MANUEL (ECTS: 2) SANTIAGO PÉREZ, JOSÉ (ECTS: 2) VEGA MORALES, ROBERTO (ECTS: 2) |

Bold names are for lecturers responsible for the subject