

<b>Program</b>	59EC – Communications Electronic Engineering B. Eng. 59SC – Telecommunications Systems Engineering B. Eng. 59SO – Sound and Image Engineering B.Eng. 59TL – Telematics Engineering B. Eng.
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Course number and name	
<b>Number</b>	595040060
<b>Name</b>	Renewable Energy
<b>Semester</b>	S7 [(September-January)]

Credits and contact hours	
<b>ECTS Credits</b>	3
<b>Contact hours</b>	30

<b>Coordinator's name</b>	Núñez Mendoza, Neftalí [neftali.nunez@upm.es]
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Specific course information	
<b>Description of course content</b>	
<p>It is an introductory course which sets out the problems of the current energy system and how renewable energies can facilitate the solution.</p> <p>The most common renewable energy systems are also introduced.</p> <p>The format of the course is two weekly hours of teaching (online through the Moodle e-learning platform or Teams, or on-site).</p>	
<b>List of topics to be covered</b>	
<ol style="list-style-type: none"> <li>1. Energy and Power               <ol style="list-style-type: none"> <li>1.1. Kinetic and potential energy.</li> <li>1.2. Heating energy.</li> <li>1.3. Electric energy.</li> </ol> </li> <li>2. Actual Energetic System               <ol style="list-style-type: none"> <li>2.1. History of energy consumption.</li> <li>2.2. History of energy sources.</li> <li>2.3. Problems of the current energy system.</li> </ol> </li> <li>3. Renewable Energies.</li> <li>4. Hydraulic, Aeolic and Sea Energy.</li> <li>5. Thermal Solar Energy.</li> <li>6. Photovoltaic Solar Energy.</li> </ol>	
<b>Prerequisites or co-requisites</b>	
– None	

<b>Specific goals for the course</b>
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### Specific outcomes of instruction

- RA1057 - Know the different elements of a solar photovoltaic system.
- RA369 - Understand the global energy problem from social, environmental and sustainability point of view.
- RA719 - Know and sizing solar photovoltaic systems.
- RA717 - Conocer y dimensionar instalaciones solares térmicas
- RA710 - Learn about different renewable energy technologies that generate electricity from kinetic energy: wind, hydraulic, tidal or wave.
- RA370 - Understand the different ways of generating renewable energy: thermal energy, kinetic energy, potential energy, photovoltaic solar energy...
- RA368 - Understand the concepts of energy and work.
- RA373 - Know the different elements of a solar heating system.
- RA371 - Learn about the regulations related to the different renewable energies.

### Further reading and supplementary materials

- Energías renovables y eficiencia Energética:  
<https://www.cienciacanaria.es/files/Libro-de-energias-renovables-y-eficienciaenergetica.pdf>
- Energías Renovables. Jaime González Velasco. Ed. Reverté.
- Radiación solar y dispositivos fotovoltaicos. Eduardo Lorenzo. Ed. Progenza.
- Estadística de generación energías renovables IDEA:  
<http://informeestadistico.idae.es/>
- Informe E.R en sector electrico de REE:  
[https://www.ree.es/sites/default/files/11\\_PUBLICACIONES/Documentos/Renovables-2018.pdf](https://www.ree.es/sites/default/files/11_PUBLICACIONES/Documentos/Renovables-2018.pdf)
- Moodle.