Subject	SELF-CONSUMPTION AND PHOTOVOLTAIC INTEGRATION IN URBAN ENVIRONMENTS
Credits	6 ECTS (4T+2P)
Character	PV-Systems track
Semester	2nd
Language	Spanish

Competencess

CG5 – Information management: to search for and manage appropriate bibliographic resources efficiently, to learn to continue studies in a largely autonomous way as a basis for future research and innovation activity.

CG6 - Economic and administrative management: critically analyze and design complex systems and solutions, apply technologies to manage and deal with complexity with a systemic approach; make judgments on the economic, social, ethical and environmental implications linked to the application of their knowledge (respecting the principles of equality and universality of access); analyze, select, design and integrate technologies with appropriate technical-economic criteria.

CG8 - Apply methodologies, procedures, tools and state-of-the-art standards for the creation of new technological components; build new hypotheses and models, evaluate them and apply them to problem solving.

CG9 - Communicate judgments and knowledge to specialized and non-specialized audiences in a reasoned, clear and unambiguous manner

CB6 - Possess and understand knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context

CB7 - Que los estudiantes sepan aplicar los conocimientos adquiridos y su capacidad de resolución de problemas en entornos nuevos o poco conocidos dentro de contextos más amplios (o multidisciplinares) relacionados con su área de estudio

CB8 - Students should be able to apply their acquired knowledge and problem-solving skills in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study

CB9 - Students should be able to communicate their conclusions and the ultimate knowledge and rationale behind them to specialized and non-specialized audiences in a clear and unambiguous manner.

CB10 - Possess the learning skills that will enable the student to continue studying in a manner that will be largely self-directed or autonomous.

CT4 - Team leadership: to carry out team work (such as those of some of the evaluation activities of the subjects), to integrate into a research group by actively participating in its meetings, collaborating with own initiative in R+D+i works or projects; to interact effectively with the members of the multidisciplinary work team

CE5 - Design, analysis, characterization, planning and installation of general purpose, stand-alone orgrid-connected photovoltaic components and systems..

Outcomes

RA01 - To know how a photovoltaic systems engineering project is carried out.

RA02 - General training on applications, practical use of photovoltaic systems and an overview of photovoltaic technology.

RA13 - Know the specific engineering tools for the design, analysis and evaluation of grid-connected photovoltaic buildings.

RA14 - Understand the implications of co-design from an architectural perspective.

RA19 - Know the practical aspects of installation

RA21 - Apply the knowledge acquired in electrical engineering of photovoltaic systems

RA31 - Knowledge of the particularities of the ESF on the grid

RA48 - Apply the services and tools available on the market to the design of photovoltaic systems

Description and syllabus

The main objective of this course is to provide students with knowledge and specific engineering tools for the design, analysis and simula-tion of integrated photovoltaic systems in buildings and residential environments, with special emphasis on self-consumption applications. Th-roughout the course, laboratory practices are carried out so that students have a direct experience of the concepts presented.

Schematically, the syllabus includes:

- Typology of photovoltaic systems for self-consumption and architectural integration.
- Photovoltaic construction elements: the photovoltaic envelope.
- Energy, design and construction: inspiring solar architecture projects.
- Design and simulation of photovoltaic systems for self-consumption applications and architectural integration.
- Production estimation and uncertainty
- Monitoring, operation and maintenance
- Profitability analysis of photovoltaic systems for self-consumption with and without architectural integration

Practices and laboratory

- Analysis of monitoring data and calculation of characteristic parameters
- Design and analysis of photovoltaic systems for self-consumption
- Simulation practices