



ROMÂNIA
MINISTERUL EDUCAȚIEI ȘI CERCETĂRII
UNIVERSITATEA DIN CRAIOVA
FACULTATEA DE INGINERIE ELECTRICĂ

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NUMELE DISCIPLINEI Sisteme energetice hibride la bordul aeronavelor si rachetelor	COURSE NAME Hybrid power systems on board aircraft and rockets
DATE GENERALE	GENERAL INFORMATION
Program de studii: Sisteme complexe pentru inginerie aerospaciala Anul: II Master Semestrul: I Credite ECTS: 5 Tipuri de activități: Curs, Laborator Tip evaluare: Examen Titular: Conf.dr.ing. Jenica-Ileana CORCAU	Study Program: Complex systems for aerospace engineering Year: II Master Semester: I ECTS Credits: 5 Types of activities: Lecture, Laboratory Assessment: Exam Lecturer: Conf.dr.ing. Jenica-Ileana CORCAU
SCOPUL DISCIPLINEI	COURSE PURPOSE
Transmite studentilor la Master informatii referitoare la sistemele energetice hibride la bordul aeronavelor si rachetelor, modele matematice, elemente de calcul si proiectare a acestor sisteme, analiza proceselor dinamice, constructia si functionarea acestora.	It sends students to the Master information on hybrid energy systems on aircraft and rockets, mathematical models, computational elements and design of these systems, analysis of dynamic processes, their construction and operation.
CERINȚE PREALABILE	PREREQUISITES
Se bazează pe cunoștințele acumulate la licenta la disciplinele Instalatii electrice de bord I si II.	It is based on the knowledge acquired during the bachelor's degree in the subjects of On-board Electrical Installations I and II.
OBIECTIVE	OBJECTIVES
• Obiectiv 1: Dobândirea de cunoștințe de specialitate in tematica sistemelor energetice hibride de la bordul aeronavelor si rachetelor. • Dobândirea de competențe de specialitate in tematica sistemelor energetice hibride de la bordul aeronavelor si rachetelor.	• Objective 1: Acquisition of specialized knowledge in the field of hybrid energy systems on board aircraft and rockets. • Acquisition of specialized skills in the field of hybrid energy systems on board aircraft and rockets.
CONȚINUT CURS	LECTURE CONTENT
• Consideratii generale asupra sistemelor energetice ale aeronavelor si rachetelor; • Pile de combustie: bazele termodinamice, calcul, tipuri, utilizare; • Aplicatii ale pilelor de combustie in industria aerospaciala; • Sistem de putere cu pile de combustie pentru aviatia comerciala; • Tipuri de combustibil revolutionar; Cerinte si definitii; Starea tehnologiei; • Vehicule aeriene fara pilot; PEMFC – pentru aplicatii UAV; SOFC-uri pentru aplicatii UAV; Exemple de aplicatii a pilelor de combustie pe UAV-uri;	• General considerations regarding the energy systems of aircraft and rockets; • Fuel cells: thermodynamic bases, calculation, types, use; • Applications of fuel cells in the aerospace industry; • Combustion engine power system for commercial aviation; • Types of revolutionary fuel; Requirements and Definitions; State of technology; • Unmanned aerial vehicles; PEMFC - for UAV applications; SOFCs for UAV applications; Examples of Fuel Cells Applications on UAVs;



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• Conceptul "Aeronave mai mult electrice (MEA)" • Actionarea electrica la bordul aeronavelor; • Conceptul "Aeronave Total-Electrice (AEA)".	• The concept of "More Electric Aircraft (MEA)"; • Electric action on board aircraft; • The concept of "All-Electric Aircraft (AEA)".
METODE DE EVALUARE	EVALUATION METHODS
Examen	Exam
COMPETENȚE DOBÂNDITE	ACQUIRED COMPETENCIES
• Modelarea și analiza sistemelor energetice hibride de la bordul aeronavelor si rachetelor • Evaluarea performanțelor sistemelor energetice hibride de la bordul aeronavelor si rachetelor	• Modeling and analysis of hybrid energy systems on board aircraft and rockets • Performance evaluation of hybrid energy systems on board aircraft and rockets
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