



Jordan University of Science and Technology
Faculty of Engineering
Aeronautical Engineering Department

Course name and number:

AE 523 Propulsion

Credit, contact hours and categorization:

Credit and contact hours	Contact hours	Categorization
3 Credit Hours	Sunday-Tuesday-Thursday: 1-hour lecture Monday-Wednesday 1.5-hours lecture	Engineering Topic

Instructor's or course coordinator's name:

Name	Dr. Ahmad Alshyyab
Office location	N1-L2
Email address	asalshyyab@just.edu.jo

Textbook and other supplemental materials:

Textbook			
Title	Fundamentals of Jet Propulsion with Applications .		
Author(s)	Ronald D. Flack		
Edition	1st Edition		
Other Information	Cambridge University Press.		
References			
Book Name	Author(s)	Edition	Other Information
Gas Turbine Theory	Cohen, H., Rogers, G.F.C. and Saravanamutloo, H.I.H.	5th Edition	
Elements of Gas Turbine Propulsion	Mattingly, J.D, McGraw Hill, New York	1st Edition	

Course information:

Course Catalogue		
3 Credit Hours. An integrated approach to the application of engineering principles to propulsion systems, Topics include: turboprops, turbojets, turbofans, turbo shaft, ramjets, scramjets and rocket engines, beside intakes, compressors, fans, combustors, turbines and propelling nozzles.		
Course type : This course is required to fulfill the program.		
Prerequisites or co-requisites		
Line Number	Course Name	Prerequisite Type
713440	AE344 Aerodynamics (1)	Prerequisite / Pass



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Specific goals of the course :

Specific outcomes of instruction and the student outcomes (SO) mapping		
Outcomes	SO Mapping	Course Outcome Weight (Out of 100%)
Classify propelling engines according to methods of propulsion and usage, and recognize the components of each types and its function	5SO8	5%
Analyze thermodynamics of an aircraft jet engine and calculate the engine performance measures, such as thrust and specific fuel consumption in terms of design and operating conditions.	5SO1, 6SO2, 6SO4, 5SO7, 8SO8	30%
Compare the performance of each engine type as a function of operating condition and engine parameters, such as maximum engine temperature, pressure ratio, and flight Mach number.	5SO 8	5%
Analyze performance of standalone inlets (diffusers) , nozzles, Combustors and understand the factors that limit their performance.	10SO1, 5SO2, 15SO8	30%
Analyze the operating characteristics of compressors and turbines in terms of given blade geometry, blade angles and deflections, and the shaft angular speed.	10SO 1, 10SO 2, 5SO 7, 5SO 8	30%

Brief list of topics to be covered:

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1	Introduction.	Chapter 1 From Textbook
Weeks 2, 4, 5	Ideal Cycle Analysis	Chapter 2 From Textbook
Weeks 6, 7	Non-Ideal Cycle Analysis	Chapter 3 From Textbook
Weeks 8, 9	Diffusers	Chapter 4 From Textbook
Weeks 10,11	Nozzles	Chapter 5 From Textbook
Weeks 12,13, 14	Axial Flow Compressors, Turbines and Fans	Chapter 6 From Textbook
Weeks 15,	Combustors, Afterburners	Chapter 9 From Textbook