## Course Objectives:
- To give an overview of various air craft engines, rocket engines and their applications.
- To provide knowhow on tools to analyze various rocket propulsion.
- To know the testing of rocket engines.

## Syllabus:

## Expected Outcomes:
The students will be able to
i. Perform thermodynamic analysis of aircraft engines
ii. Carry out performance analysis of aircraft systems and components
iii. Formulate and solve rocket engine problems

## Text books:
2. Saeed Farokhi, Aircraft Propulsion, Wiley, 2e, 2014

## Reference books:

## COURSE PLAN

<table>
<thead>
<tr>
<th>Module</th>
<th>Contents</th>
<th>Hours</th>
<th>End Sem. Exam. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Fundamentals of Propulsion- Classification types of propulsive devices-Airscrew, Turbojet, Turboprop, turbofan, Turboshaft, Ramjet, Scramjet, Pulsejet and Rocket engines. Comparative study of performance characteristics applications.</td>
<td>7</td>
<td>15%</td>
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<tr>
<td>II</td>
<td>Theory of propulsion – Thrust, thrust power and efficiencies of turbojet engine. Thermodynamics analysis of turbojet engine cycle, Propellers: Types of propellers</td>
<td>7</td>
<td>15%</td>
</tr>
</tbody>
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FIRST INTERNAL EXAMINATION
Turbojet engine components- air intakes, Compressors, Combustion chambers, turbines, nozzles turbine and compression matching – Thrust augmentation.  


Liquid propellant feed systems, injectors, Starting and ignition, Igniters liquid propellant, Precautions in propellant handling. Hybrid Rockets combustion processes in SPR and LPR combustion instability- Control of instabilities –Cooling of Rocket motors  


The question paper should consist of three parts  

**Part A**
There should be 2 questions each from module I and II
Each question carries 10 marks
Students will have to answer any three questions out of 4 (3X10 marks =30 marks)

**Part B**
There should be 2 questions each from module III and IV
Each question carries 10 marks
Students will have to answer any three questions out of 4 (3X10 marks =30 marks)

**Part C**
There should be 3 questions each from module V and VI
Each question carries 10 marks
Students will have to answer any four questions out of 6 (4X10 marks =40 marks)

Note: Each question can have a maximum of four sub questions, if needed.