University of Management and Technology

Course Outline

Course code: ET 442 Course title: Gas Turbine Engine - II

<table>
<tr><td>Program</td><td>BSc Aircraft Maintenance Engineering Technology</td></tr>
<tr><td>Credit Hours</td><td>02</td></tr>
<tr><td>Duration</td><td>16 weeks</td></tr>
<tr><td>Prerequisites</td><td>Gas Turbine Engine-I ET341</td></tr>
<tr><td>Resource Person</td><td>Dr. Kamran Asim</td></tr>
<tr><td>Counseling Timing (Room# CB1-01)</td><td><table><tr><td>Tuesday</td><td>01:00pm to 03:00pm</td></tr><tr><td>Wednesday</td><td>11:00pm to 01:00pm</td></tr><tr><td>Friday</td><td>02:30pm to 04:30pm</td></tr></table></td></tr>
<tr><td>Contact</td><td>kamran.asim@umt.edu.pk</td></tr>
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Chairman/Director signature…….

Dean's signature…… **Date…….**

Learning Objective:

The course is directed towards the description, performance, classification, and applications of gas turbine engines. For comprehensive analysis and understanding, the course has been divided into two parts: Engine Description & Performance and Engine Classification and systems.

Upon successful completion of the course, the student should be able to:

CLO No	CLO Statement	PLO	Learning Domain and level
1.	Identify and describe various systems of a gas turbine engine	1	C2
2.	Apply the engineering knowledge to troubleshoot the systems in a scientific and organized manner	4	C3
3.	Understand and communicate appropriately the monitoring, inspection and engine handling procedures with technical personal in maintenance setup in effective manner	10	C4

1. CLO – PLO MAPPING:

CLOs	PLOs											
	Engineering Technology	Problem Analysis	Design / Development of	Investigation	Modern Tool Usage	The Engineering	Environment and	Ethics	Individual and Team Work	Communication	Project Management	Lifelong Learning
	1	2	3	4	5	6	7	8	9	10	11	12
1	**C2**											
2				**C3**								
3										**C4**		

Learning Methodology:

- The course content is designed as a mixture of theory lectures and web tutorials.
- Case studies, and workshop tasks involving hands on practice are also designed as part of the course to ensure active participation and consolidate learning.
- Participants will be evaluated based on assignments and quizzes from theory, worked examples and individual/group presentations.

Recommended Text Books:

"Gas Turbine Engine, Cat B1 – Module 15, Part 66 Basic Training" by Aero-Bildung, 2017.

Reference Books:

1. Aviation Maintenance Technician Certification

2. Power Plant JAA ATPL Training, Vol. 5

3. "Gas Turbine Theory", fifth edition, by H. Cohen and GFC. Rogers, published by Pearson Education Ltd, 2001.

Grade Evaluation Criteria

Following is the criteria for the distribution of marks to evaluate final grade in a semester.

Theory:

Marks Evaluation	Marks in percentage
Quizzes (x4 - 6)	15%
Assignments (x1 - 2)	10%
Class Participation	5%
Presentation / Viva	5%
Mid Term Examination	25%
End Term Examination	40%
Total	100 %

Calendar of Course contents to be covered during semester

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Week	Course Contents	Reference Chapter(s)	Quiz	Assignments	CLOs
1	Gas turbine engine fuel systems, their function and applications Introduction to Full-Authority Digital Engine Control	15.11	1	0	1
2-3	Internal and External Air systems; Cooling air systems, Auxiliary air system, Ice protection system Engine starting methods, applications and troubleshooting of starter systems Types of engine ignition units, ignition system components	15.12 15.13			
4-5	Engine indication systems' components description; working principles of engine working and performance indication instruments	15.14 Additional notes	2	1	1
6	Thrust augmentation methods Principle of afterburning, thrust increase, and fuel consumption Construction of afterburner system	15.15 Additional notes			

7	Basics and characteristics of turboprop engine; integrated engine and propeller controls Case studies for failure, inspection, and repair of turboprop engine	15.16 Additional notes	1	1	1,2
8	Typical helicopter turboshaft engines, their classification and applications Case study of helicopter turboshaft engine T53	15.17 Additional notes 15.18			
9	Mid Term Examination				
10-11	Introduction to APUs, their description, location, operation, and role in engine Powerplant structures Powerplant supply and control components Rules for general and specific Powerplant removal and installation Powerplant components rigging, inspection, and adjustment procedures	15.18 15.19 Additional resources	1	1	1

12	Engine fire detection systems for single and multi-engines Engine fire extinguishing	15.20 Additional notes	1	1	2
13-14	Engine and engine performance monitoring Engine inspection procedures Engine starting and ground run-up procedures Engine preservation/de-preservation equipment and procedures	15.21 Additional notes 15.22			
15					
16	Revision				

Class Policy

STUDENTS ARE REQUIRED TO READ AND UNDERSTAND ALL ITEMS OUTLINED IN THE PARTICIPANT HANDBOOK

CLASS ATTENDANCE: Students need to be in class at the assigned time. After 10 minutes past the assigned time, the students will be marked absent.

TURN OFF MOBILE PHONE! It is unprofessional to be texting or otherwise.

READ EMAILS! Participants should regularly check their university emails accounts regularly and respond accordingly. Students would be responsible if they miss a deadline because of not reading the emails.

CLASS ATTENDANCE POLICY: A minimum of 80% attendance is required for a participant to be eligible to sit in the final examination. Being sick and going to weddings is absence and will not be counted as present. Participants with less than 80% of attendance in a course will not be allowed to take end term exams. International students who will be leaving for visa during semester should not use any days off except for visa trip to avoid reaching short attendance.

MOODLE: UMT –LMS (Moodle) is an Open Source Course Management System (CMS), also known as a learning Management System (LMS). Participants should regularly visit the course website on MOODLE Course Management system, and fully benefit from its capabilities. In case of any problem while using MOODLE, visit http://oit.umt.edu.pk/moodle. For queries email moodle@umt.edu.pk

HARASSMENT POLICY: Sexual or any other harassment is prohibited and is constituted as punishable offence. Sexual or any other harassment of any participant will not be tolerated. All actions categorized as sexual or any other harassment when done physically or verbally would also be considered as sexual harassment when done using electronic media such as computers, mobiles, internet, emails etc.

USE OF UNFAIR MEANS/ HONESTY POLICY: Any participant found using unfair means or assisting another participant during a class test/quiz, assignments or examination would be liable to disciplinary action.

PLAGIARISM POLICY: All students are required to attach a "Turnitin" report on every assignment, big or small. Any student who attempts to bypass "TurnItin" will receive "F" grade which will count towards the CGPA. The participants submit the plagiarism report to the resource person with every assignment, report, project, thesis etc. If student attempts to cheat Turnitin, a second "F" will be awarded that will count towards the CGPA. There are special rules on plagiarism for final reports etc. all outlined in your handbook.

COURSE WITHDRAWAL POLICY: Students may withdraw from a course till the end of the 12th week of the semester. Consequently, grade 'W' will be awarded to the student which shall have no impact on the

calculation of the GPA of the student. A Student withdrawing after the 12th week shall be automatically awarded “F” grade which shall count in the GPA.

COMMUNICATION OF RESULTS: The results of quizzes and assignments are communicated to the participants during the semester and answer books are returned. It is the responsibility of the course instructor to keep the participants informed about his/her progress during the semester. The course instructor will inform a participant at least one week before the final examination related to his or her performance in the course.

Faculty Signature ……. **Date…….**