

University of Management and Technology

Course Outline

Course code: ET 335

Course title: Aeroplane Aerodynamics, Structures and Systems I

Program	BSc Aircraft Maintenance Engineering Technology	
Credit Hours	03+01	
Duration	15 weeks	
Prerequisites	AT 102, AT 205	
Resource Person	Fatima Najeeb Khan	
Counseling Timing (Room#)	Tuesday	14:00 to 17:00
	Thursday	14:00 to 17:00
	Friday	14:00 to 17:00
Contact	fatima.najeeb@umt.edu.pk	

Chairman/Director signature.....

Dean's signature.....

Date.....

Learning Objective:

The course covers the structural and functional aspects of the airframe, common methods of surface protection against corrosion, air conditioning and cabin pressurization, fire protection, flight controls and detailed understanding of instruments and avionics systems. The subject also introduces high speed flight concepts along with study of aeroplane aerodynamics and flight controls. Knowledge of this subject allows the student to understand that safe and efficient structures play an important role in aircraft operational safety. Student will be equipped with relevant structural knowledge for the maintenance and repair of aircraft.

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

S No	CLO Statement	PLO	Learning Domain and level
1.	Demonstrate a theoretical knowledge of aircraft systems and structures and interrelationships with other systems.	1	C2
2.	Provide a detailed description of the subject using theoretical fundamentals and specific examples of aircraft systems. and to interpret results from various sources and measurements and apply corrective action where appropriate.	1	C3
3.	Conduct and Interpret the results of experiments and demonstrations of aircraft systems.	3	P3
4.	Effectively communicate experiment results through both written reports and oral Presentations	10	P3

1. CLO – PLO MAPPING:

CLOs	PLOs											
	Engineering Knowledge	Problem Analysis	Design / Development of Solutions	Investigation	Modern Tool Usage	The Engineering Technologist and Society	Environment and Sustainability	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			P3									
4										P3		

Learning Methodology:

- The teaching of the course will be via a series of lectures. This will be complemented by the use of textbook, and an extensive range of web resources plus handouts/articles and video clips.
- Participants should expect 5-6 class activities during the semester which will form the basis for evaluation (viva). 2 assignments, individual/group presentations and quizzes. These activities will be complemented with discussions and analysis to strengthen the learning.

Recommended Text Books:

1 .“ Aeroplane Aerodynamics, Structures and Systems” by AERO-Bildung Germany [2015].

Reference Books:

1. “Aeroplane Aerodynamics, Structures and Systems”-Aviation Maintenance Technician Certification Series by Aircraft Technical Book Company.

Grade Evaluation Criteria

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

Marks Evaluation

Marks in percentage

Theory:

Marks Evaluation	Marks in percentage
Quizzes (x6)	15%
Assignments (x2)	10%
Evaluation(Viva)	5%
Presentation	5%
Mid Term Examination	25%
End Term Examination	40%
Total	100 %

Practical:

Marks Evaluation	Marks Percentage
Class activity	5%
Team work	5%
Quizzes	15%
Viva	5%
Lab Report	10%
Final Evaluation	60%
Total	100%

Calendar of Course contents to be covered during semester

Course code: AT 335

Course title: Aeroplane Aerodynamics, Structures and Systems I

Week	Course Contents	Reference Chapter(s)	Quizzes	Assignments	CLO No
1	Aeroplane Aerodynamics and Flight Controls	11.1	1	1	1
2	High Speed Flight.	11.1			
3-5	Airframe Structures-General Concepts <ul style="list-style-type: none"> • Construction, Specifications and Documentation • Loads, Stresses and Fatigue • Introduction to Fuselage and Wing Construction and Design • Assembly of Aircraft Components • Surface Protection and Cleaning 	11.2	2	1	3
6-7	Airframe Structures-Aeroplanes <ul style="list-style-type: none"> • Fuselage (ATA 52/53/56) • Wings (ATA 57) • Stabilisers (ATA 55) • Flight Control Surfaces (ATA 55/57) • Nacelles/Pylons (ATA 54) 	11.3		1	1
8	Mid Term Examination				

9-10	Instrument Systems (ATA 31)	11.5			
11	Avionics Systems <ul style="list-style-type: none"> • Auto Flight Systems (ATA 22) • Communication Systems (ATA 23) • Navigation Systems (ATA 34) 	11.5	3	2	2,3
12-13	Electrical Power <ul style="list-style-type: none"> • Introduction to Aircraft Electrics • Inverter • AC Power Generation 	11.6			
14-15	Electrical Power <ul style="list-style-type: none"> • DC Power in a primar AC-Network • Circuit Protection 	11.6	4	2	3

Aeroplane Aerodynamics, Structures and Systems I Lab Outline

Week	Experiment No.	Title of Experiment	CLO
1	1	Identify <ul style="list-style-type: none"> • Various Control Surfaces • Types of Control Surface balance devices installed 	3,4
2	2	<ul style="list-style-type: none"> • Tension and secure aircraft control cable (s) • Swage steel-wire cable 	
3	3	Locate and identify control system of aircraft	
4	4	Identify types of corrosion on samples	
5	5	Identify applications of mechanically and electrically/electronically operated instruments	
6	6	Carry out pitot/static check	
7	7	Drain pitot/static system	
8	8	Inspect instruments for correct installation and markings	
9	9	Check aircraft instruments for correct function	
10	10	Trace and locate electrically operated control system components	
11	11	Inspect and test aircraft motor system	
12	12	Connect/disconnect power supply	

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.....**