

University of Management and Technology

Course Outline

Course code: ET 205

Course title: Digital Techniques/ Electronic Instrument Displays

Program	BSc Aircraft Maintenance Engineering Technology	
Credit Hours	03+01	
Duration	15 weeks	
Prerequisites	ET104 Electrical Fundamentals, ET103 Electronic Fundamentals	
Resource Person	Arslan Asim	
Counseling Timing (Room#)	Tuesday	14:00 to 17:00
	Thursday	14:00 to 17:00
	Friday	14:00 to 17:00
Contact	arslan.asim@umt.edu.pk	

Chairman/Director signature.....

Dean's signature.....

Date.....

Learning Objective:

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

S No	CLO Statement	PLO	Learning Domain and level
1.	Define the basic concepts of digital systems, particularly related to aircrafts.	1	C1
2.	Demonstrate a high level of understanding of the aircraft electronic systems.	1	C3
3.	Analyze given digital circuits in terms of their inputs, operations and outputs.	2	C4
4.	Study the latest developments in the aircraft digital avionics systems.	12	C1
5.	Practically implement the theoretical knowledge gained and obtain valid results	5	P4

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	C1											
2	C3											
3		C4										
4												C1
5					P4							

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. "Digital Techniques" by AERO-Bildung (2nd Edition) Germany [2016]

Reference Books:

1. "Digital Logic and Computer Design" by M. Morris Mano published by Prentice-Hall.
2. "Digital Techniques Electronic Instrument Systems"-Aviation Maintenance Technician Certification Series by Aircraft Technical Book Company

Grade Evaluation Criteria

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

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LECTURE WISE COURSE BREAKDOWN					
Lec No	Description	Ref	Quizzes	Assignment	CLO No
1	Electronic Instrument Systems	5.1		01	02, 04
2-4	Number Systems	5.2	01		01
5	Quiz				
6-7	Data Conversion	5.3			01, 03
8-10	Data Buses	5.4	01		01, 02, 04
11	Quiz				
11	Logic Circuits	5.5			01, 03
12-13	Computers	5.6			01, 04
14-15	Fiber optics	5.10	01		01, 04
16	Quiz				
17-18	Electronic Displays	5.11	01	01	01, 02, 04
19-20	Electrostatic Sensitive Devices	5.12			01,

					02
21	Quiz				
22-24	Software Management	5.13	01		01, 02, 04
25-26	Electromagnetic Compatibility	5.14			
27	Quiz				
27-30	Typical Digital Aircraft Systems	5.15	01		01, 02, 03, 04
30	Quiz				
30	Revision				
END SEMESTER EXAMINATION					

Practical:

Serial No.	Description	CLOs
1.	Analog to Digital Converter (ADC)	4,5
2.	Digital to Analog Converter (DAC)	
3.	Sampling Process and Study of Aliases	
4.	Verification of basic binary operators and basic theorems using gates	
5.	Universality of NAND and NOR gates	
6.	Implementation of Full Adder and 4-bit Parallel Adder using IC 74283	
7.	Implementation of Full Subtractor and 4-bit Parallel Subtractor using IC 74283	
8.	Design of combinational circuits	
9.	Implementation of Encoder and Decoder using IC 74138 & 74148	
10.	Implementation of Multiplexer and Demultiplexer IC74151&74138	
11.	Design of Sequential Circuits	

12.	Implementation of asynchronous and synchronous counters	
13.	Flight Simulator Training	

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.....