

University of Management and Technology

Course Outline

Course code: 322

Course title: Radio Navigation

Program	BS Aviation Professional Pilot
Credit Hours	3-0
Duration	01 Semester
Prerequisites	Nil
Resource Person	TBD
Counseling Timing (Room#)	TBD
Contact	TBD

Chairman/Director signature.....

Dean's signature.....

Date.....

Course Learning Outcomes: (CLOs)

S No	CLO Statement	Learning Domain and level
1	Explain the fundamental principles of electromagnetic waves, modulation, antennas, and wave propagation, including ionospheric effects and factors influencing signal transmission in aviation communication and navigation	C1
2.	Analyze and interpret the working principles, coverage, errors, and accuracy of major radio navigation aids such as NDB/ADF, VOR/DVOR, DME, and ILS in the context of operational flight applications.	C2
3.	Apply knowledge of radio navigation systems to accurately interpret cockpit instruments (e.g., CDI, HSI) and assess their effectiveness and limitations in supporting safe and precise aircraft navigation.	C3

CLO – PLO Mapping:

CLOs	<u>PLO 1</u> Aeronautical Knowledge	<u>PLO 2</u> Flight Proficiency	<u>PLO 3</u> Regulatory Awareness	<u>PLO 4</u> Safety & Risk Management	<u>PLO 5</u> Communication Skills	<u>PLO 6</u> Ethical Responsibility	<u>PLO 7</u> Technological Adaptability	<u>PLO 8</u> Teamwork & Leadership	<u>PLO 9</u> Critical Thinking & Problem Solving	<u>PLO 10</u> Lifelong Learning
1	★									
2	★								★	
3	★	★		★						

Learning Methodology:

1. Learning methodology will include interactive class sessions followed by Power Point Slides containing Flight videos.
2. Students would be regularly evaluated through quizzes to keep them in pace with the course flow.

Grade Evaluation Criteria

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

Marks Evaluation	Marks in percentage	Details
Quizzes (x 4)	15%	QUIZ 1: CLO 1
		QUIZ 2: CLO 1
		QUIZ 3: CLO 2
		QUIZ 4: CLO 3
Assignments (x3)	10%	Assignment 1: CLO 1
		Assignment 2: CLO 2
		Assignment 3: CLO 3
Mid Term Examination	35%	{CLO 1, CLO 2}
End Term Examination	40%	(CLO1, CLO 2, CLO 3)
Total		100%

Recommended Text Books:

EASA textbook for the principle of flight. Soft copies will be provided

Reference Books:

EASA Oxford

Course Curriculum Reference:

Please Visit Pakistan Civil Aviation Authority (PCAA), Learning Objectives (LOs) for Personnel Licenses – ATPL, MPL, CPL (Aero plane And Helicopter).

Calendar of Course contents to be covered during semester

Course code: PT 303

Course title: – RADIO NAVIGATION

Week	Course Contents	Reference Chapter(s) as per PCAA Learning Objectives	Course Learning Objective (CLO)
1.	Electromagnetic waves, Frequency, wavelength, amplitude, phase angle	062 01 01 01	CLO1
2.	Pulse characteristics, Carrier, modulation	062 01 01 06	

3.	Antennas, Types of antennas Polarization, QUIZ1	062 01 02 03	CLO1	
4.	Wave propagation	062 01 03 00		
5.	Structure of the ionosphere, Ground waves, Space waves,	062 01 03 01 - 062 01 03 03		
6.	Propagation with the frequency bands, Assignment 1	062 01 03 04		
7.	Doppler principle, QUIZ2	062 01 03 05		
8.	Factors affecting propagation	062 01 03 06		
9.	RADIO AIDS, Mid Term	062 02 00 00		CLO2
10.	Presentation and interpretation, Coverage and range, Assignment 2	062 02 01 03		
11.	Errors and accuracy, Non-Directional Beacon (NDB)/ Automatic Direction Finder (ADF) , Principles ,	062 02 02 00		
12.	Presentation and interpretation, Factors affecting range and accuracy, QUIZ 3	062 02 02 05		
13.	VOR and Doppler VOR Principles,	062 02 03 00		
14.	VOR Presentation and interpretation, Errors and accuracy	062 02 03 04		
15.	DME, DME Principles	062 02 04 00, 062 02 04 01		
16.	ILS, main components of an ILS, Course Deviation Indicator (CDI) and a Horizontal Situation Indicator, QUIZ 4 , Assignment 3	062 02 05 00, 062 02 05 01	CLO3	
17.	Final Exams	CLO1 , CLO2, CLO3		

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 75% 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 75% 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 <https://lms.umt.edu.pk/login/index.php>.

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.

Date.....