**University of Management and Technology**

Course outlines

**Course Background Details:**

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| --- | --- |
| Program | BS Aviation Management  |
| Course code | AM417 |
| Course Title | Environmental Factors in Aviation Management |
| Credit Hours | 03 |
| Duration | 15 Weeks  |
| Prerequisites | AM114 Airport FundamentalsAM-325 Airport Management AM 201 Air traffic Management |
| Resource Person | Muhammad NawazGill |
| Counselling Timing | 1. ours per week
 |

1 **Description**

Transportation is an essential contributor to the health and well-being of the nation’s economy.

Within the transportation sector, commercial aviation has evolved into the fastest, reliable and

most far reaching transportation mode in little more than a century. The world economy benefits

greatly from the ability to move people and products all over the globe - quickly and safely.

Aviation contributes to quality of life – allowing people to visit friends & relatives and travel, to

experience new places. At the same time, Aviation affects the environment in many ways; people

living near airports are exposed to noise from aircraft; streams, rivers, and wetlands may be

exposed to pollutants discharged in storm water runoff from airports; and aircraft engines emit pollutants to the atmosphere. Not only is the performance of aircraft dependent on the environment but also its impact on the safety of air operations.

This course in intended to promote understanding of the environmental issues & threats being confronted by the airport management/authorities, the navigational services, airlines and the stakeholders in smooth, reliable and sustainable airport/flight operations. This course is also intended to enrich the students’ knowledge of the measures and arrangements to mitigate the effects of environmental threats for sustainable and smooth flights & airport operations with least effect on the people and planet.

1. **Contact Details;**

Course Coordinator Muhammad Nawaz Gill Email nawaz.gill@umt.edu.pk

1. **Course Learning Outcomes (CLOs)**

|  |  |
| --- | --- |
| **CLO Statement** | Learning Domain and level |
| 1-Identify environmental issues and impact to aviation | C 1 |
| 2-Describe aviation operations and hazardous effects. | C2 |
| 3-Demonstrate Practices to mitigate the effects | C 3 |
| 4-Anayze the challenges faced in implementation of waste management program and sustainable flight operations | C4 |
| 5-Develop waste management plans and strategies | C5 |

**3.CLO – PLO Mapping:**

|  |  |
| --- | --- |
| **CLOs** | **PLOs** |
| **Critical Thinking and Decision Making** | **Effective Communication Skills** | **Ethics** |  **Core Business Knowledge and Competence** | **Effective Teamwork** | **Industry Focus** | **Global Perspective (Internationalization)** | **Leadership Skills** | **Computer-based Information** | **Corporate Social Responsibility** | **Organizational Behaviour** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 |  |  |  | **C1** |  | **C1** |  |  |  |  |  |
| 2 |  |  |  |  |  | **C2** | **C2** |  |  | **C2** |  |
| 3 |  | **C3** |  |  |  |  |  |  | **C3** |  |  |
| 4 |  |  | **C 4** |  |  |  |  |  | **C4** | **C4** |  |
| 5 | **C5** |  | **C5** |  | **C5** |  |  |  |  |  |  |

**Note: The three domain levels (affective, cognitive, and psychomotor) are described below:**

**A: Receiving, Responding, Valuing, Organizing&Characterization**

**C: Knowledge Comprehension, Application, Analysis, Synthesis&**

 **Evaluation**

**P: Imitation, Manipulation, Precision, Articulation &Naturalization**

1. **Learning Methodology:**

The course will be delivered through a series of lectures followed by the class activities, group tasks /discussions, assignments and presentations. This course is versatile in the sense that it incorporates two special assignments, one is a research one and the other is an activity/Scenario-based practical assignment. These two assignments will help to develop a research insight, foster creativity and critical thinking and above all create more interest in the course. A case study alongside an embedded ethical dilemma is also included as a special topic to familiarise about the ethical professional obligations

**6-Resources**

**Textbooks**

1. **-Air transport and the environment 1stedition by Ben Daley**
2. **Plane truth ; Aviation ,s real impact on people and the environment by Rose Bridge**

**Journals and articles**

1-Aviation and Sustainable Development, Background Paper No. 9, Commission on

Sustainable Development, Ninth Session, 16-27 April 2001, New York; Prepared by

International Civil Aviation Organization

[www.un.org › esa › sustdev › csd › csd9\_bp9 pdf](http://www.un.org › esa › sustdev › csd › csd9_bp9 pdf)

2-Environmental Factors Affecting Loss of Control In-Flight: Best Practice for Threat

 Recognitionand Management; Prepared by International Air Transport Association

[flightsafety.org › wp-content › uploads › 2017/07 › IA...pdf](https://flightsafety.org/wp-content/uploads/2017/07/IATA-guidance-loci-environmental-factors-affecting-loci-1st-edition.pdf)

3-Recycling, Reuse and Waster Reduction at Airports, A Synthesis Document; Prepared by

the Office of Airports, Federal Aviation Administration, April 24, 2013

[www.faa.gov › media › RecyclingSynthesis2013 pdf](http://www.faa.gov › media › RecyclingSynthesis2013 pdf)

4-Advisory Circular, AC No.: 150/5320-14; Subject: Airport Landscaping for Noise Control

Purposes; Department of Transportation, Federal Aviation Administration

[www.faa.gov › media › Advisory\_Circular › 150\_5320...pdf](http://www.faa.gov › media › Advisory_Circular › 150_5320...pdf)

5- ICAO annex 16 CAEP ..and balanced approach of icao to control environmental impact

[www.01db.com › wp-content › uploads › sites › 2016/11](http://www.01db.com › wp-content › uploads › sites › 2016/11)

6 Magazine ,Airport International Review

1. **Recommended Readings:**
	1. Updated news articles on environment
	2. Critical Issues in Aviation and the Environment, Transportation Research Circular, Number E – C089; Transportation Research Board of the National Academics.
	3. Environmental and Health Impacts of Aviation, Workplan Ref EP/IV/A/STOA/2000/07/02; Published by the European Parliament.
	4. Aviation and the Environment; Parliamentary Office of Science and Technology, the UK Parliament.

**Online resources and links**

[www.icao.int](http://www.icao.int)

[www.iata.org](http://www.iata.org)

[www.aviationsafetymagazine.com](http://www.aviationsafetymagazine.com)

[www.caapakistan.com.pk](http://www.caapakistan.com.pk)

[www.easa.europa.eu](http://www.easa.europa.eu)

[www.faa.gov](http://www.faa.gov)

[www.aviation-safety.net](http://www.aviation-safety.net)

Internationalairportreview.com

1. **Course Schedule:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | **Topics** | **Readings** | **Ref of CLO** |
| **1** | **Aviation and the Environment issues** | Chapter !& 2Book -1 Air transport and the environment | 1 |
| **2** | **Air transport and climate**  | Chapter 3 Book -1 Air trans port and the environment | 1 |
| **3** | **Air trans port and air quality** **Quiz 1** | Chapter -4Book -1 |  2 |
| **4** | **Aircraft Noise****Assignment 1 ( research)** |  Chapter -5Book -1 | 1,2,,3 |
| **5** | **Environmental factors and control measures by ICAO** |  Aviation and Sustainable Development, Background Paper by International Civil Aviation Organization | 3 |
| **6** | **Airport Noise (Control)****Balanced approach to Control noise by ICAO****Quiz 2** | Airport Landscaping for Noise Control PurposesAdvisory Circular, AC No.: 150/5320-14 | 3 |
| **7** | **Airport Waste** | Recycling, Reuse and Waste Reduction at AirportsFAA Report; April 24, 2013 | 1,2,3 |
| **8** | **Mid – Term** **Assignment 2 class activity airport waste identification****Book 2 chapter 3 &4( Plane truth)3&4** |
| **9** | **Airport Waste****Quiz 3** | Recycling, Reuse and Waste Reduction at AirportsFAA Report; April 24, 2013 | 3,4 |
| **10** | **Loss of Control in Flight** | Environmental Factors Affecting Loss of Control In-Flight: Best Practice for Threat Recognition and ManagementIATA publication, First Edition | 1,2.3 |
| **11** | **Loss of Control in Flight****Assignment 3Case study** | Environmental Factors Affecting Loss of Control In-Flight: Best Practice for Threat Recognition and ManagementIATA publication, First Edition | 4,5 |
| **12** | **Airport and Sustainable Development****Quiz 4** | Aviation and Sustainable Development, Commission on Sustainable Development, Ninth Session,  | 4.5 |
| **13** | **Airport and Sustainable Development** | Book 1Ch -6 | 5 ,6 |
| **14** | **Regulatory obligations and tools to control environmental impact** | ICAO Annex 16 ,NAP PCAACAEP ICAO | 5,6 |
| **15** | **Discussion on professional Ethical dilemma (assignment4)****Project/Presentation(assignment 5 )** | Case study Topics out of list below (for presentation) | 5,6 |

**Assessments:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Assessment** | **Weightage** | **Detail** | **Due** |
| Quiz-1 Quiz-2Quiz-3Quiz-4 | 15% | Covers Topics: book.1, Chapter1,2,3Covers Topics: Aviation and sustainable development by icaoCovers Topics: Loss of control -iCovers Topics: Aviation and sustainable development by icao | 3rd session6th session9th session12th session |
| Assignment- 1Assignment-2Assignment-3Assignment -4Assignment -5 | 5%5%5%5%10% |  Research Assignment, out of the topics provided belowAssignment. Out of below topicsAssignment, out of below topicsCase study with ethical Dilemma (in- class activity)Presentation, On bellow topics | 4th session8th session11th session15th session15th session |
| Mid Exam (Written) | 20% | MCQs and/or Short Essay Qs | 8th session |
| Final Exam ( written ) | 35 % | MCQ, short questions & case study | As per schedule |
|  |  |  |  |

**Quizzes:**

There will be a total of four quizzes. Each quiz will comprise of 10 MCQs with four options for each question. The topics for each quiz are listed above.

**Assignment 1 (Research):**

Assignment Topic:

The lecturer mayallocate topics from the ones listed below to any group or individualto explore and write down a short essay elucidating it with relevant examples:

1. Factors effecting issues at the airport
2. Waste steam
3. Challenges faced in implementation of waste management program

**Purpose:**

1-To keep students informed about the latest issues in airport management.

2- To encourage students to explore contemporary solutions to new problems.

**Directions:**

1- Word limit: 1500 words

2- Submission: Via Turnitin

**Structure of Report**

1-Use Times New Roman 12 font size with line spacing of 1.5 and justify from both side

**Assignment-2**

Identificationof types of waste, thesources and measures to reduce at source

**Purpose:**

1-To keep students informed about the Waste stream waste source and waste reduction

2- To encourage students to explore contemporary solutions to new problems.

**Directions:**

1- Word limit: 1500 words

2- Submission: Via Turnitin

**Structure of Report**

1-Use Times New Roman 12 font size with line spacing of 1.5 and justify from both side

**Assignment-3**

**Assignment Topic:**

The lecturer may allocate topics from below to any group or individual to explore and present before the class

 a-Airport noise Impact

b- Noise control measures and instruments

c -Challenges faced in noise control

d -loss of control in-flight

**Purpose:**

1-To develop analytical skills of students

2-To encourage students to explore contemporary solutions to new problems.

3- To develop Teamwork and temperament to work in group

**Directions:**

1- Word limit: 1500 words

2- Submission: Via Turnitin

**Structure of Report**

1-Use Times New Roman 12 font size with line spacing of 1.5 and justify from both side

**Assignment 4 (Ethics):**

Discussion on Professional Ethics

A Case Study on an Ethical Dilemma will be provided and discussed.

This is an in-class activity. The lecturer will select Contemporary topic covering respecting topics the course as below

Case Study 1: In cruise at Flight Level 350 over the Atlantic Ocean the aircraft entered cloud in the region of the inter-tropical convergence zone (ITCZ – see below). Airspeed indications became erratic, the autopilot and auto thrust disconnected and the stall warning activated. The pilots lost control of the aircraft which later crashed into the sea. The investigation concluded that the accident was initiated by large ice crystals obstructing the pitot probes, temporarily rendering the airspeed indications invalid. This condition was known to, but misunderstood by, the industry in general at the time. The loss of airspeed in turn caused the flight control computers to revert to a more basic functionality, in which some flight envelope protections (including the low speed stall protection) were lost, and the autopilot and auto-thrust to disconnect. At the same time the altitude indications reduced by around 300 feet. The startling suddenness of the onset of the warnings, cautions and indication anomalies was considered to be a factor in the pilots’ failure to correctly recognise and rectify the situation. For further information on this case study, please see the following link from BAE: <https://www.bea.aero/fileadmin/documents/docspa/2009/f-cp090601.en/pdf/f-cp090601.en.pdf>

Case Study 2: The aircraft took off shortly after a heavy 4-engined aircraft and encountered wake vortex turbulence early in the climb out. The turbulence itself was not catastrophic but the control inputs applied by the pilot flying were so sudden and severe that the ultimate load of the vertical fin was exceeded, and it detached. The aircraft became uncontrollable and crashed. It was later identified that the pilot flying had previously undergone training in upset recovery that was not appropriate to the aircraft type involved. For further information on this case study, please see the following link from NTSB: http://www.ntsb.gov/investigations/AccidentReports/Reports/AAR0404.pdf

**Group Presentations**

Proposed topics

 1-Enviornmrental issues and effects

 2-Challenges faced in Airport waste reduction

1. Effects of aviation to the environment
2. Factors affecting loss of control in flight
3. Balanced approach to control Noise
4. Role of ICAO in Controlling aviation pollution
5. Brief on the functioning of CAEP

 8 -National aviation Policy in sustainable aviation

**Directions**

1. Time Allowed: 15-20 minutes

2. Group: Each group may have 04 members

3- each member to present for at least 3 minutes

4 – Questions shall be asked towards the end of presentation at random .

5- The performance evaluation shall be based on body language, dress ,tone ,pith ,time management ,logical delivery covering the topic and ability to answer questions.

**Mid Exam:**

Mid Exam will comprise of MCQs and/or Short Essay type questions

**Final Exam:**

Final Exam will comprise of MCQs and a short case with associated questions. The case will be distributed one week before the exam along with some practice questions from the case.

**Academic Integrity:**

All students are required to uphold the highest levels of academic integrity while participating in this course.

Academic integrity is about: honesty, trust, fairness, respect and responsibility in all work and is vital for any research/scholarship. We need to give proper credit to those who do the work and acknowledge their intellectual contribution. All students enrolled in IAS are to adhere to academic integrity while completing each assessment task.

Dishonesty in assessment can lead to a requirement to undertake additional work, failure in a unit or in a part of it, suspension from the University or even permanent expulsion from the University.

Plagiarism (a form of dishonesty) constitutes using the work of another without indicating by referencing (and by quotation marks when exact phrases or passages are borrowed) that the ideas expressed are not one's own.

**Final Grade:**

Students need to obtain an overall 50% mark to pass this course.

**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.

**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.