

UNIVERSITY OF MUMBAI

No.UG/166 of 2019
Mumbai - 400 032
27th March, 2019

To,
The Principal,
The Bombay Flying Club's
College of Aviation,
Juhu Airport,
S. V. Road,
Vile Parle (West),
Mumbai – 400 056.

Sir,

I am to invite your attention to the Ordinances, Regulations and Syllabus relating to the Diploma Course in Airport Operation and to inform you that the recommendations made by the Ad-hoc Board of Studies in Aviation at its meeting held on 6th February, 2018 have been accepted by the Academic Council at its meeting held on 5th May, 2018 **vide** item No. 4.23 and subsequently approved by the Management Council at its meeting held on 23rd May, 2018 **vide** item No. 7 and that in accordance therewith, in exercise of the powers conferred upon the Management Council under Section 74(4) of the Maharashtra Public Universities Act, 2016 (Mah. Act No. VI of 2017) the Ordinance 6452 & 6453 Regulations 9183 to 9186 and the syllabus as per (CBCS) for the Diploma Course in Airport Operation has been introduced and the same have been brought into force with effect from the academic year **2018-19**, accordingly. (The same is available on the University's website www.mu.ac.in).

ajms
(Dr. Ajay Deshmukh)
REGISTRAR

A.C/4.23/05.05.2018
M.C/07/23.05.2018

No. UG/166 -A of 2019

MUMBAI-400 032

27th March, 2019

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Science & Technology,
- 2) The Chairman, Ad-hoc Board of Studies in Aviation
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Co-ordinator, University Computerization Centre,

ajms
(Dr. Ajay Deshmukh)
REGISTRAR

UNIVERSITY OF MUMBAI



Ordinances, Regulations and Syllabus

Program: Diploma in Airport Operations

**To be introduced from Academic year 2018-2019
as per Choice Based Credit Semester and Grading System**

PREAMBLE

The growth of civil aviation industry is taking place at a very rapid pace in India. With initiatives like “Regional Connectivity Scheme” in the Civil Aviation Policy the number of Airports in the country will increase quite significantly. The human resources required to plan, construct, manage and operate these airports will also grow significantly. The existing 128 airports in India also require airport professionals continuously.

The Airport Operations is a very specialized subject that is not a part of and conventional university course. Recently few courses in this field have been launched, but the organizations involved in Airport Operations conduct in-house training for imparting knowledge and skills in this area.

The contents of the course have been designed by aviation professionals with many years of experience and consultation with organizations involved in Airports operations, management and regulation were also conducted while designing the syllabus. The individual equipped with this diploma will have knowledge and skills for managing Airport Operations and will have employability with organizations that are involved in Airport Planning, Construction, Management and Operations. The individuals already working in aviation sector will also benefit from this Diploma as it will provide standardized knowledge and skill set based on syllabus developed in close coordination with the industry.

The Diploma can further be developed into an Advanced Diploma and then into degree programme in Airport Operations with specializations in various fields.

O. XXXX Title of the Program

Diploma in Airport Operations

R. XXXX Duration

- One year part time divided into two semesters

R. XXXX Intake capacity

- 60 learners

O. XXXX Eligibility

- 1) Graduate in any discipline with Mathematics as a subject in Xth Standard.
or
- 2) Diploma in Engineering with Mathematics or Applied Mathematics (three years duration after 10th standard awarded by Institute/ Polytechnic recognized by AICTE or equivalent).
or
- 3) XIIth passed and superannuated from armed/defense services with a rank of NCO or higher.

R. XXXX Fee

- Rs. 75,000/- per semester

Faculty requirement (Visiting)

- Aviation professionals (with a graduate degree) who have successfully completed five years in supervisory position in related fields as instructors to teach aviation related courses
- One MBBS Doctor to conduct First aid classes
- One Instructor to teach safety & emergency procedures and dangerous goods rules
- An instructor holding or having held an RTR license

Industry Visits

- Visit to all areas of International Airport, Domestic Airport, VFR (Visual Flight Rules) Airfield and Heliport.
- Visit to a Air Traffic Control Centre

Program structure

Code	Title	Th	Pr	Cr
Semester I		In Hours		
USDAO 1.1	PROFESSIONAL COMMUNICATION SKILLS	25	15	2
USDAO 1.2	INTRODUCTION TO AVIATION INDUSTRY, AIRPORTS AND GENERAL MANGEMENT	35	15	2
USDAO 1.3	AERODROME LAYOUTS AND GROUND AIDS	50	25	3
USDAO 1.4	AIERODROME LIGHTINGS AND TRAFFIC MANAGEMNET	45	20	3
USDAO P1	PRACTICAL I based on 1.2,1.3,1.4	-	60	2
	Semester I Total	155	135	12
Semester II		In Hours		
USDAO 2.1	TERMINAL MANGEMENT	45	10	3
USDAO 2.2	AIRSIDE MANAGEMENT	55	30	3
USDAO 2.3	AVIATION SECURITY, CITY SIDE MANEGEMENT AND AERONAUTICAL REVENUE	45	20	2
USDAO 2.4	AIRPORT REGULATIONS, AERODROME LICENSING AND AVIATION SAFETY	50	15	3
USDAO P2	PRACTICAL II based on 2.1,2.2,2.3	-	60	2
	Semester II Total	195	135	13
	Total of Semester I and Semester II	350	270	25

INFRASTRUCTURE

Front / Reception Area	1
Class Rooms (A/C)	1
Computers with Internet Facility, Printer, Scanner & LCD projector	

RXXXX Scheme of Examination

1. A written examination at the end of each semester will be conducted by the College / Institute on behalf of university.
2. Practical examination will be conducted at the end of each semester.
3. Question paper for semester end examination will be set by college for Semester I and by University for Semester II.
4. Learner shall be allowed to appear for additional examination in theory in the courses where he/she has secured grade 'F'.
5. Additional examination for odd semester will be conducted by the college institution within one month after declaration of the result of the odd semester.

Semester	Course	Theory Marks		Practical	Total	Credits
		Internal	Sem End (2 Hours Duration)			
I	USDAO 1.1	40	60		100	2
	USDAO 1.2	40	60		100	2
	USDAO 1.3	40	60		100	3
	USDAO 1.4	40	60		100	3
	USDAOP1	--	--	50	50	2
II	USDAO2.1	40	60		100	3
	USDAO2.2	40	60		100	3
	USDAO2.3	40	60		100	2
	USDAO2.4	40	60		100	3
	USDAOP2	--	--	50	50	2
Total					900	25

Internal Evaluation	Marks
Active Participation	05
Overall Conduct	05
Test/ Seminar/ MCQ	10
One Project / One Case Study/ Assignment	20
Total	40

Semester End Question Paper Pattern for each course:

Question	Unit	Marks	Maximum Marks with option
Q1	I	15	25
Q2	II	15	25
Q3	III	15	25
Q4	I, II, III	15	25

R. 8623 Passing Standard

- a) Learner shall be awarded Diploma if he/she obtains any one of the grade 'O', 'A+', 'A', 'B+', 'B', 'C', 'D' in each of the course of Semester I and II
- b) Learner shall be admitted to second semester of the program irrespective of the grades secured in any of the course of the first semester
- c) A written examination at the end of each semester will be conducted by the College /Institute on behalf of university.
- d) Practical examination will be conducted at the end of each semester
- e) Learner shall be allowed to appear for additional examination in theory in the courses where he/she has secured grade 'F'
- f) Additional examination will be conducted by the University within one month after declaration of the result of the semester

SEMESTER I

USDAO 1.1: PROFESSIONAL COMMUNICATION SKILLS Credits: 2	LECTURE Hours 25	PRACTICAL Hours 15
<p>UNIT – I ENGLISH LANGUAGE(LISTENING & SPEAKING) Communication Skills: Listening, Speaking.</p>	8	5
<p>UNIT-II-ENGLISH LANGUAGE (READING & WRITING) Reading Writing : Resumes Interviews</p>	8	5
<p>UNIT-III- TECHNICAL REPORT WRITING & BUSINESS COMMUNICATIONS Report Writing Project Proposal writing</p>	9	5
<u>TOTAL</u>	25	15

USDAV1.2: INTRODUCTION TO AVIATION INDUSTRY & AIRPORTS and GENERAL MANGEMENT CREDITS: 2	LECTURE HOURS 35	PRACTICAL HOURS 15
<p>UNIT 1 : INTRODUCTION TO AVIATION INDUSTRY 1. Civil aviation in India 2. Infrastructure and related facilities 3. About Ministry of Civil Aviation and DGCA 4. Air Navigation Services 5. Airport Companies in India 6. Airlines in India 7. Corporate jets and charters 8. International Civil Aviation Organization</p>	10	
<p>Unit II : AIRPORTS 1. Introduction to Airports 2. Classification of Airports 3. Basic Airport Layouts 4. Various components of Airports 5. Various organization and their functions at Airports 6. Various modes of Airport Ownerships in India</p>	10	

7. UNIT-III : GENERAL MANAGEMENT ENHANCING CREATIVITY SAFETY MANAGEMENT SYSTEMS PERSONAL MANAGEMENT MEDICAL EMERGENCIES AND FIRST AID	10 5	 15
TOTAL	35	15
USDAO 1.3 AERODROME LAYOUTS& GROUND AIDS CREDITS: 3	LECTURE Duration 50	PRACTICAL Hours 25
UNIT - I : AERODROME GROUND AIDS Runways Taxiways, Aprons and Holding Bays Pavements Visual Aids Aerodrome Reference Code Aerodrome data Aeronautical data Aerodrome reference point Aerodrome and runway elevations Aerodrome reference temperature Aerodrome dimensions and related information Strength of pavements Pre-flight altimeter check location Declared distances Condition of the movement area and related facilities Number, siting and orientation of runways A-1 Clearways and Stopways Calculation of declared distances Slopes on a runway Runway surface evenness Determining and expressing the friction characteristics of snow- and ice-covered paved surfaces Determination of friction characteristics of wet paved runways Strips Runway end safety areas Location of threshold Approach lighting systems Priority of installation of visual approach slope indicator systems	15	10

<p>Lighting of unserviceable areas Rapid exit taxiway indicator lights Intensity control of approach and runway lights Signal area Rescue and fire fighting services Operators of vehicles The ACN-PCN method of reporting pavement strength Frangibility</p> <p>UNIT II: Physical Characteristics</p> <p>Runways Runway shoulders Runway turn pads Runway strips Runway end safety areas Clearways Stopways Radio altimeter operating area</p> <p>Taxiways Taxiway shoulders . Taxiway strips Holding bays, runway-holding positions, intermediate holding positions and road-holding positions. Runway backup system Aprons Isolated aircraft parking position De-icing/anti-icing facilities</p>	15	10
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<p>Visual aids for navigation Indicators and signalling devices Wind direction indicator Landing direction indicator Signalling lamp Signal panels and signal area</p> <p>UNIT III Aerodrome Markings</p> <p>General Runway designation marking Runway centre line marking Threshold marking 5.2.5 Aiming point marking Touchdown zone marking Runway side stripe marking Taxiway centre line marking Runway turn pad marking Runway-holding position marking</p>	20	5
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<p>Intermediate holding position marking VOR aerodrome checkpoint marking Aircraft stand marking Apron safety lines Road-holding position marking Mandatory instruction marking Information marking</p>		
<p>Advanced visual docking guidance system Aircraft stand maneuvering guidance lights Road-holding position light.</p> <p><u>Signs</u> General Mandatory instruction signs Information signs VOR aerodrome checkpoint sign Aerodrome identification sign Aircraft stand identification signs Road-holding position sign</p> <p><u>Markers</u> General. Unpaved runway edge markers Stopway edge markers Edge markers for snow-covered runways Taxiway edge markers Taxiway centre line markers Unpaved taxiway edge markers Boundary markers</p> <p><u>Visual aids for denoting obstacles</u> Closed runways and taxiways, or parts thereof Non-load-bearing surfaces Pre-threshold area Unserviceable areas</p> <p><u>Visual aids for denoting restricted use areas</u> Closed runways and taxiways, or parts thereof Non-load-bearing surfaces Pre-threshold area Unserviceable areas Framework for safety management systems Guidance material supplementary to Annex 14, Volume I</p>		
TOTAL	50	25

USDAO1.4:AERODROME LIGHTINGS AND TRAFFIC MANAGEMENT CREDITS: 3	LECTURE Hours 45	PRACTICAL Hours 20
<p><u>UNIT I</u> <u>Aerodrome Lights</u> Emergency lighting Aeronautical beacons Approach lighting systems Visual approach slope indicator systems Circling guidance lights Runway lead-in lighting systems Runway threshold identification lights Runway edge lights Runway threshold and wing bar lights Runway end lights Runway centre line lights Runway touchdown zone lights Rapid exit taxiway indicator lights Stopway lights Taxiway centre line lights Precision Approach Path Indicator Taxiway edge lights Runway turn pad lights Stop bars Intermediate holding position lights De-icing/anti-icing facility exit lights Runway guard lights Apron floodlighting Visual docking guidance system</p> <p><u>UNIT II</u> <u>Electrical systems</u> Electrical power supply systems for air navigation facilities System design Monitoring <u>Colours for aeronautical ground lights, markings, signs and panels</u> General Colours for aeronautical ground lights Colours for markings, signs and panels Aeronautical ground light characteristics Mandatory instruction markings and information markings</p>	<p>15</p> <p>15</p>	<p>20</p>

Requirements concerning design of taxiing guidance signs Aeronautical data quality requirements Location of lights on obstacles.		
<u>UNIT III Aerodrome Traffic Management</u>		
Rules of the Air in Aerodrome Circuit Rules for surface movement Air Traffic services in Apron areas Air Traffic Services in Maneuvering areas Allotment of Parking Bays ACDM ATFM AERODROME METEOROLOGICAL SYSTEMS and Aerodrome Minima NON VISUAL AERODROME NAVIGATION AIDS (VOR, NDB, ILS, DME Visual approach slope indicator systems	15	
<u>TOTAL</u>	45	20
TOTAL FOR SEM I	155	75

SEMESTER II

USDAO 2.1: TERMINAL MANGEMENT CREDITS:3	LECTURE Hours 45	PRACTICAL Hours 10
<p><u>UNIT- I TERMINAL: INFRASTRUCTURE AND AGENCIES</u></p> <p>Typical Terminal Building Layouts & infrastructure, including Check-in Areas, Security Hold areas. Agencies in Terminal Building and City Side of Airport: Immigration Security Airlines Baggage Handling Agency Concessionaires Lounges</p>	15	
<p><u>UNIT – II: TERMINAL MANGEMENT</u></p> <p>Terminal Management Principles Terminal Management Procedures and Processes Passenger Facilitation (Arrivals, Departures, Transit) Airport Upkeep and Cleanliness</p>	15	
<p><u>UNIT III: NON AERONAUTICAL REVENUE</u></p> <p>Non Aeronautical Revenue at Airports Various Sources of Non Aeronautical Revenue Marketing for Non Aeronautical Revenue Non Traffic Revenue Sources and Models Concessionaires, Rentals. Advertisements</p>	15	10
<u>TOTAL</u>	45	10

USDAO 2.2 : AIRSIDE MANAGEMENT CREDITS: 3	LECTURE Hours 55	PRACTICAL Hours 30
<p><u>UNIT I : Airside Operations</u></p> <p>Airport Operational Services Airport Maintenance Practices Apron management service Wildlife strike hazard reduction Bird Control and Reduction Fuel Refilling Pavement Surface Conditions Ground servicing of aircraft Aerodrome vehicle operations</p>	20	10

USDAO 2.3: AVIATION SECURITY, CITY SIDE MANAGEMENT AND AERONAUTICAL REVENUE. CREDITS: 2	LECTURE Hours 45	PRACTICAL Hours 20
<u>UNIT 1 AVIATION SECURITY</u> Aviation Security Course as laid down by BCAS.	15	
<u>UNIT II CITY SIDE MANAGEMENT</u> Vehicular Traffic Flows at Departure and Arrival Areas Vehicular Parking City Side Landscaping Beautification of Airports DANGEROUS GOODS HANDLING CONTINGENCY PLANS FOR TERMINAL BUILDINGS AND CITY SIDE AREAS	15	10
<u>UNIT – III AERONAUTICAL REVENUE</u> ROUTE NAVIGATION FACILITY CHARGES TERMINAL NAVGATION Landing Charges Landing and Parking Charges	15	10
<u>TOTAL</u>	45	20
USDAO 2.4 : AIRPORT REGULATIONS, AERODROME LICENSING and AVIATION SAFETY CREDITS: 3	LECTURE Hours 50	PRACTICAL Hours 15
<u>UNIT- I AIRPORT REGULATIONS</u> DGCA CAR, CIRCULARS and ADVISORIES on AIRPORT OPERATIONS	20	
<u>UNIT II AERORODROME LICENSING</u> The policies and practices in India regarding Aerodrome licensing. The documentation required for Aerodrome Licensing.	15	15
<u>UNIT III AVIATION SAFETY</u> SAFETY MANAGEMENT SYTEMS And AVIATION RELATED ACTS AND REGULATIONS.	15	
TOTAL	50	15
TOTAL SEM II	195	75

REFERENCES:

- 1) John Seely. The Oxford Guide to Effective Writing and Speaking. OUP, 2005.
- 2) Michael Swan. Practical English Usage. 3rd ed. OUP, 2005.
- 3) DGCA INDIA, Civil Aviation Requirements.
- 4) ICAO Annex 14 and other relevant ICAO Annexes Documents and Manuals.
- 5) Radio Telephony Guide – by RK Bali

PRACTICALS

The practical hours above are for various situational awareness, problem solving and tabletop exercises and the indicative list of Practical Sessions is as follows,

Semester I

- 1) Mock Interviews
- 2) Group Discussions
- 3) Listening Skills and Public Speaking Exercise
- 4) Technical Report Writing
- 5) Practise of administering FIRST AID including CPR.
- 6) Study Various Aerodrome Layouts with case studies of International and Domestic Airports
- 7) Practical session on calculation of declared distances
- 8) Study and Reproduction of Aerodrome Markings
- 9) Prepare a model of Signal Area
- 10) Operating different types of Fire Extinguishers
- 11) Study and reproduction of various signage
- 12) One project work on any of the Units of Semester I.

SEMESTER II

- 1) Study Airport Terminal Layout with case studies of renowned International and Domestic Airport Terminals
- 2) Emergency Evacuation Drill of Terminal Building
- 3) Study and practice hygiene and cleanliness procedures and practices
- 4) Practical on wildlife hazard management
- 5) Practical on Bird Control
- 6) Mock Airport Emergency Drill
- 7) Mock Bomb Threat Exercise
- 8) Mock Unlawful Interference Exercise
- 9) Study of Runway Occupancy Times
- 10) Actual handling of Radio Telephony
- 11) Calculations of aeronautical revenues for various types of aircraft for various Categories of airports.
- 12) One project work on any of the Units of Semester II