University of Mumbai

Website – mu.ac.in
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Academic Authorities,
Meetings &Services (AAMS)
Room No. 128, M. G. Road, Fort,
Mumbai – 400 032.
Tel. 022-68320033

Re- accredited with A ++ Grade (CGPA 3.65) by NAAC
Category- I University Status awarded by UGC

No. AAMS_UGS/ICD/2024-25/426 Date : 24th March, 2025.

To,
The Director,
Garware Institute of Career Education
and Development,
Vidyanagari
Santacruz (East)
Mumbai – 400 098.

Sub : B.Sc (Aeronautics) (Three year) (Sem I & II)

Sir,

With reference to the subject noted above, this is to inform you that the recommendations made by the **Advisory Committee & Board of Management** of Garware Institute of Career Education & Development at its Meeting held on **4th September, 2023** & resolution passed by the **Board of Deans** at its meeting held on **9th August, 2023 vide** Item No. **9.2** have been accepted by the **Academic Council** at its meeting held on **1st November, 2023 vide** Item no. **9.3 (C) 2 (N)** and subsequently approved by the **Management Council** at its meeting held on **14th August, 2024 vide** Item No. **6** 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 following program with Ordinance for Title of the Program, Eligibility and Regulation numbers for Duration of Program, Intake Capacity, Scheme of Examinations, Standard of Passing and Credit Structure along with syllabus of **B.Sc (Aeronautics) (Sem I & II)** (Appendix – 'A') have been introduced and the same have been brought into force with effect from the academic year **2023-24**.

The New Ordinances & Regulations as per NEP 2020 is as follows :-

Sr. No	Name of the Program	Ordinance no. for Title	Ordinance no. for Eligibility	Duration
A	U.G. Certificate in Aeronautics	O.GUA – 517 A	O.GUA – 518 A	One year
B	U.G. Diploma in Aeronautics	O.GUA – 517 B	O.GUA – 518 B	Two year
C	B.Sc (Aeronautics)	O.GUA – 517 C	O.GUA – 518 C	Three year
D	B.Sc (Hons) (Aeronautics)	O.GUA – 517 D	O.GUA – 518 D	Four year

2/-

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No. AAMS_UGS/ICD/2024-25/426 Date: 24th March, 2025

Regulation Nos	
Duration	R.GUA – 541
Intake Capacity	R.GUA – 542
Scheme of examination	R.GUA – 543
Standard of Passing	R.GUA – 544
Credit Structure	R.GUA – 545 A
	R.GUA – 545 B
	R.GUA – 545 C
	R.GUA – 545 D
	R.GUA – 545 E
	R.GUA – 545 F
	R.GUA – 545 G
	R.GUA – 545 H

(Dr. Prasad Karande)
REGISTRAR

A.C/9.3(C)2(N)/01/11/2023
M.C/6/14/8/2024

****

Copy forwarded with Compliments for information to:-

1) The Chairman, Board of Deans
2) The Dean, Faculty of Science & Technology.
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Director, Department of Information & Communication Technology,
6) The Co-ordinator, MKCL.

Copy forwarded for information and necessary action to :-	
1	The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Dept)(AEM), dr@eligi.mu.ac.in
2	The Deputy Registrar, Result unit, Vidyanagari drresults@exam.mu.ac.in
3	The Deputy Registrar, Marks and Certificate Unit,. Vidyanagari dr.verification@mu.ac.in
4	The Deputy Registrar, Appointment Unit, Vidyanagari dr.appointment@exam.mu.ac.in
5	The Deputy Registrar, CAP Unit, Vidyanagari cap.exam@mu.ac.in
6	The Deputy Registrar, College Affiliations & Development Department (CAD), deputyregistrar.uni@gmail.com
7	The Deputy Registrar, PRO, Fort, (Publication Section), Pro@mu.ac.in
8	The Deputy Registrar, Executive Authorities Section (EA) eau120@fort.mu.ac.in He is requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to the above circular.
9	The Deputy Registrar, Research Administration & Promotion Cell (RAPC), rapc@mu.ac.in
10	The Deputy Registrar, Academic Appointments & Quality Assurance (AAQA) dy.registrar.tau.fort.mu.ac.in ar.tau@fort.mu.ac.in
11	The Deputy Registrar, College Teachers Approval Unit (CTA), concolsection@gmail.com
12	The Deputy Registrars, Finance & Accounts Section, fort draccounts@fort.mu.ac.in
13	The Deputy Registrar, Election Section, Fort drelection@election.mu.ac.in
14	The Assistant Registrar, Administrative Sub-Campus Thane, thanesubcampus@mu.ac.in
15	The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan, ar.seask@mu.ac.in
16	The Assistant Registrar, Ratnagiri Sub-centre, Ratnagiri, ratnagirisubcentar@gmail.com
17	The Director, Centre for Distance and Online Education (CDOE), Vidyanagari, director@idol.mu.ac.in
18	Director, Innovation, Incubation and Linkages, Dr. Sachin Laddha pinkumanno@gmail.com
19	Director, Department of Lifelong Learning and Extension (DLLE), dlleuniversityofmumbai@gmail.com

Copy for information :-	
1	P.A to Hon'ble Vice-Chancellor, vice-chancellor@mu.ac.in
2	P.A to Pro-Vice-Chancellor pvc@fort.mu.ac.in
3	P.A to Registrar, registrar@fort.mu.ac.in
4	P.A to all Deans of all Faculties
5	P.A to Finance & Account Officers, (F & A.O), camu@accounts.mu.ac.in

To,

1	The Chairman, Board of Deans pvc@fort.mu.ac.in
2	**Faculty of Humanities,** **Dean** 1. Prof.Anil Singh Dranilsingh129@gmail.com **Associate Dean** 2. Dr.Suchitra Naik Naiksuchitra27@gmail.com 3.Prof.Manisha Karne mkarne@economics.mu.ac.in
	Faculty of Commerce & Management, **Dean** 1. Dr.Kavita Laghate kavitalaghate@jbims.mu.ac.in **Associate Dean** 2. Dr.Ravikant Balkrishna Sangurde Ravikant.s.@somaiya.edu 3. Prin.Kishori Bhagat kishoribhagat@rediffmail.com

	Faculty of Science & Technology **Dean** 1. Prof. Shivram Garje ssgarje@chem.mu.ac.in **Associate Dean** 2. Dr. Madhav R. Rajwade Madhavr64@gmail.com 3. Prin. Deven Shah sir.deven@gmail.com
	Faculty of Inter-Disciplinary Studies, **Dean** 1.Dr. Anil K. Singh aksingh@trcl.org.in **Associate Dean** 2.Prin.Chadrashekhar Ashok Chakradeo cachakradeo@gmail.com
3	Chairman, Board of Studies,
4	The Director, Board of Examinations and Evaluation, dboee@exam.mu.ac.in
5	The Director, Board of Students Development, dsd@mu.ac.in DSW direcotr@dsw.mu.ac.in
6	The Director, Department of Information & Communication Technology, director.dict@mu.ac.in

AC-1/11/2023
Item No- 9.3 (C) - 2

As Per NEP 2020

University of Mumbai

Title of the program

A- U.G. Certificate in Aeronautics
B- U.G. Diploma in Aeronautics
C- B.Sc. (Aeronautics)
D- B.Sc.(Hons.) (Aeronautics)

(Garware Institute of Career Education and Development)

Syllabus for
Semester- Semester I and II

Ref: GR dated 20th April,2023 for Credit Structure of UG

(with effect from the academic year 2023-24 Progressively)

UNIVERSITY OF MUMBAI

(AS PER NEP 2020)

Sr. No.	Heading	Particulars	
1	Title of program O: GUA- 517 A	A	U.G. Certificate in Aeronautics
	O: GUA- 517 B	B	U.G. Diploma in Aeronautics
	O: GUA- 517 C	C	B.Sc. (Aeronautics)
	O: GUA- 517 D	D	B.Sc. (Hons.) (Aeronautics)
2	Eligibility O: GUA- 518 A	A	HSC (Science) OR Equivalent with (PCME) **OR** Passed Equivalent Academic Level 4.0
	O: GUA- 518 B	B	1. The candidate who has successfully completed U.G. Certificate in Aeronautics. **OR** Passed Equivalent Academic Level 4.5 2. The candidate who's Under Graduate Certificate credits are 60% equivalent to U.G. Diploma in Aeronautics & he/she earns minimum 8 Credits from U.G. Certificate in Aeronautics. 3. As per NEP criteria on the basis of RPL- Recognition of Prior Learning, Candidate to be admitted to 2nd Year subject to He/she securing minimum 50% in the 1st Year assessment of U.G. Certificate in Aeronautics and HSC (Science) OR Equivalent with (PCME)
	O: GUA- 518 C	C	1. The candidate who has successfully completed U.G. Diploma in Aeronautics **OR** Passed Equivalent Academic Level 5.0 2. The candidate who's Under Graduate Diploma credits are 60% equivalent to

			B.Sc. Aeronautics & he/she earns minimum 8 Credits from U.G. Diploma in Aeronautics. 3. As per NEP criteria on the basis of RPL- Recognition of Prior Learning, Candidate to be admitted to 3rd Year subject to He/she securing minimum 50% in the 2nd Year assessment of U.G. Diploma in Aeronautics. And HSC (Science) OR Equivalent with (PCME)
	O: GUA- 518 D	D	1. The candidate who has successfully completed B.Sc. Aeronautics with minimum CGPA of 7.5 **OR** Passed Equivalent Academic Level 5.5
3	Duration of Program R: GUA- 541	A	1 Year
		B	2 Years
		C	3 Years
		D	4 Years
4	R: GUA- 542 Intake Capacity	30	
5	R: GUA- 543 Scheme of Examination	NEP 50% Internal – Continuous Evaluation 50% External- Semester End Examination Individual Passing in Internal and External Examination	
6	Standards of Passing R: GUA- 544	50% in each component	
7	Credit Structure R: GUA- 545 A R: GUA- 545 B R: GUA- 545 C R: GUA- 545 D R: GUA- 545 E R: GUA- 545 F R: GUA- 545 G R: GUA- 545 H	Attached herewith	

8	Semesters	A	Sem I & II
		B	Sem I, II, III, & IV
		C	Sem I, II, III, IV, V, & VI
		D	Sem I, II, III, IV, V, VI, VII & VIII
9	Program Academic Level	A	4.5
		B	5.0
		C	5.5
		D	6.0
10	Pattern	Semester	
11	Status	New	
12	To be implemented from Academic Year Progressively	From Academic Year 2023-24	

Dr. Keyurkumar M. Nayak,
Director,
UM-GICED

Prof. (Dr.) Shivram S. Garje
Dean, Faculty of Science

Preamble

1) Introduction

The training course in the field of Aeronautics is designed to give the students a comprehensive knowledge of aircraft maintenance methodology/systems/procedures, its management and human factors to enable the participants to become skilled and competent professionals in the aviation field which confirms their commitment to excellence in an ever-changing vibrant industry.

The course will expose the participants to comprehensive and cutting edge knowledge of aviation related topics, business and good maintenance practices to enable them to develop into accomplished and proficient Maintenance/Flying/Ground/Business professional for the advantage of the industry.

2) Aims and Objectives

To impart adequate knowledge and develop the skill requirements to meet the demands of the Aviation industry.
To train the students in theory and practical elements to perform in an excellent manner for advancement in career.
To provide exposure to Air law, Civil Aviation rules, Maintenance and Planning requirements, Documentation procedures, Quality systems and their practical application in an DGCA (Govt. of India) approved aircraft operating environment.
To take up highly specialized technical jobs.
To Groom the students to take up executive and supervisory roles.

3) Learning Outcomes

Recall the knowledge of aircraft and its systems, and the good maintenance practices acquired in the program and effectively apply pertinent knowledge and skills to the solution of practical problems and to discharge the responsibilities of the job roles of a maintenance technician /engineer.

Develop safe work routines, a sense of responsibility, technical honesty, and integrity & will have an appreciation of the high value of, and treat accordingly, the aircraft, test equipment, and tools used in the work.

4) Any other point (if any)

5) Credit Structure of the program -(Parishisth-2)

R_____A

B.Sc. (Aeronautics) Credit distribution structure 1St Year										
Level	**Sem**	**Major**		**Minor**	**OE**	**VC, SEC**	**AEC, VEC, IKS**	**OJT, FP, CEP, CC, RP**	**Cum. Cr./ Sem.**	**Degree/ Cum. Cr.**
		Mandatory	**Electives**							
4.5	I	Basic Aerodynamics (T) (2 Credits) Gas Turbine Engine Fundamentals & Helicopter Airframe Structure (4 Credits) (T)	-	-	Materials and Hardware - I (4 Credits) (T)	**VC:** Maintenance Practices-I (2 Credits) (T) **SEC:** Basic workshop Practical-I (2 credits) (P)	**AEC:** English Communication (2 credits) (T) **VEC:** Human factors – I (2 Credits) (T) **IKS:** Indian Aviation Legislation – I (2 credits) (T)	**CC:** Basic Aerodynamics (2 Credits)	22	UG Certificate 44
	II	Helicopter Aerodynamics, Structures and Systems-I (2 Credits) (T) Indian Aviation Legislation -II (4 Credits) (T)	-	Physics (2 Credits) (T)	Materials and Hardware - II (4 Credits) (T)	**VC:** Electrical Fundamentals- I (2 credits) (T) **SEC**: Maintenance Practices – II Practical (2 Credits) (P)	**AEC:** Aviation Communication (2 credits) (T) **VEC:** Human factors – II (2 Credits) (T)	**CC:** Helicopter Event Management (2 Credits)	22	
	Cum Cr.	12	-	2	8	4+4	6+4	4	44	
Exit option: Award of UG Certificate in Major with 44 credits and an additional 4 credits core NSQF course/ Internship OR Continue with Major and Minor										

Credit distribution structure 2nd Year										
Level	**Sem**	**Major**		**Minor**	**OE**	**VC, SEC**	**AEC, VEC, IKS**	**OJT, FP, CEP, CC, RP**	**Cum. Cr./ Sem.**	**Degree/ Cum. Cr.**
		Mandatory	**Electives**							
5.0	III	Helicopter aerodynamics structures & systems-II (T) (4 Credits) Electrical fundamentals –II (T) (2 Credits)		Chemistry (2 Credits) (T) Mathematics (2 Credits) (T)	Digital Techniques & electronic Instrument Systems-I (T) (2 Credits)	**VC:2,** Maintenance Practices-III (T) (2 credits)	**AEC:** Maintenance Practices-III (P) (2 credits)	**Field Project:** Helicopter Aerodynamic Structures-II Practical (2 Credits) **CC:** Helicopter Maintenance Management (2 Credit)	20	UG Diploma 84
	IV	Gas turbine engine -I (4 Credits) (T) Digital Techniques & electronic Instrument Systems-II(T) (2 Credits)		Electronic Fundamentals (4 Credits) (T)	Electronic Fundamentals Practical (2 Credits) (P)	**SEC:** Maintenance Practices-IV (2 Credits) (T)	**AEC:** Gas turbine Engine-I Practical (2 Credits) (P)	**CEP:** Aviation Safety Awareness (2 Credits) **CC:** Avionics (2 Credits)	20	
	Cum Cr.	**12**	**-**	**8**	**4**	**4**	**4**	**8**	**40**	
		24		**10**	**12**	**12**	**12**	**12**	**84**	
Exit option: Award of UG Diploma in Major with 80-88 credits and an additional 4 credits core NSQF course/ Internship OR Continue with Major and Minor										

R_____C

Credit distribution structure 3rd Year										
Level	**Semester**	**Major**		**Minor**	**OE**	**VC, SEC**	**AEC, VEC, IKS**	**OJT, FP, CEP, CC, RP**	**Cum. Cr./ Sem.**	**Degree/ Cum. Cr.**
		Mandatory	Electives							
5.5	V	Gas turbine engine-II (4 Credits) (T) Helicopter aerodynamics structures & systems-III (T) (4 Credits)	Aviation Management (4 credits) (T)	Aviation Management Practical (4 credits) (P)	-	VC: Gas turbine engine-II Practical (P) (2 credits)	-	Field Project (2 Credits)	20	UG Degree 124
	VI	Aircraft structure system (4 Credits) (T) Aircraft practices (4 Credits) (T)	Ground Handling Safety & Support System (4 Credits) (P)	Aircraft structure & engine practical (4 Credits) (P)	-	-	-	OJT: (4 Credits) (P)	20	
	Cum Cr.	**16**	**8**	**8**	**-**	**2**	**-**	**6**	**40**	
		40	**8**	**18**	**12**	**14**	**12**	**18**	**124**	
Exit option: Award of UG Degree in Major with 80-88 credits and an additional 4 credits core NSQF course/ Internship OR Continue with Major and Minor										

R_____D

Credit distribution structure 4rd Year										
Level	**Semester**	**Major**		**Minor**	**OE**	**VC, SEC**	**AEC, VEC, IKS**	**OJT, FP, CEP, CC, RP**	**Cum. Cr./ Sem.**	**Degree/ Cum. Cr.**
		Mandatory	**Electives**							
6.0	VII	Piston Aero plane Aerodynamics and Structures (4 Credits) (T) Aircraft avionics Snag Analysis & Rectification (4 Credits) (P) Propulsion (2 Credits) (T) Aircraft accident & incident investigation (2 Credits) (P)	Piston Engine- I (4 Credits) (T)	**RM:4** (4 Credits) (T)					20	UG Honors Degree 164
	VIII	Turbine Aero plane Aerodynamics and Structures (4 Credits) (T) Aircraft Structure, engine Snag Analysis & Rectification (4 Credits) (P) Design standard and Type certification (2 Credits) (T) Propeller (2 Credits) (P)	Piston Engine- II (4 Credits) (T)					Aircraft On Job Training (4 Credits) (P)	20	
	Cum Cr.	**24**	**8**	**4**	**-**	**-**	**-**	**4**	**40**	
		64	**16**	**22**	**12**	**14**	**12**	**22**	**162**	
Exit option: Award of UG Honours Degree in Major with 80-88 credits and an additional 4 credits core NSQF course/ Internship OR Continue with Major and Minor										

Dr. Keyurkumar M. Nayak,
Director,
UM-GICED

Prof. (Dr.) Shivram S. Garje
Dean, Faculty of Science

	Subject Code	Core Subject	Assessment Pattern			Teaching Hours			
Semester - 1		**Topics**	**Internal Marks**	**External Marks**	**Total Marks**	**Theory Hours**	**Practical hours**	**Total Hours**	**Total Credits**
	Major Mandatory								
	BSCAEROS1MJP1	Basic Aerodynamics	25	25	50	30	--	30	2
	BSCAEROS1MJP2	Gas Turbine Engine Fundamentals & Helicopter Airframe Structure	50	50	100	60	--	60	4
	Open Elective (OE)								
	BSCAEROS1P3	Materials and Hardware-I	50	50	100	60	--	60	4
	Vocational Courses (VC)								
	BSCAEROS1P4	Maintenance Practices-I	25	25	50	30	--	30	2
	Skill Enhancement Courses (SEC)								
	BSCAEROS1P5	Basic workshop Practical-I	100	--	100	--	60	60	2
	Ability Enhancement Courses (AEC)								
	BSCAEROS1P6	English Communication	25	25	50	30	--	30	2
	Value Education Course (VEC)								
	BSCAEROS1P7	Human factors – I	25	25	50	30	--	30	2
	Indian Knowledge System (IKS)								
	BSCAEROS1P8	Indian Aviation Legislation - I	25	25	50	30	--	30	2
	Co-curricular Courses (CC)								
	BSCAEROS1P9	Basic Aerodynamics	50	--	50	--	60	60	2
		Total	**400**	**225**	**600**	**270**	**120**	**390**	**22**

Semester – II									
	Subject Code	**Core Subject**	**Assessment Pattern**			**Teaching Hours**			
Semester - 2		**Topics**	**Internal Marks**	**External Marks**	**Total Marks**	**Theory Hours**	**Practical hours**	**Total Hours**	**Total Credits**
	Major Mandatory								
	BSCAEROS2MJP10	Helicopter Aerodynamics, Structures and Systems-I	25	25	50	30	--	30	2
	BSCAEROS2MJP11	Indian Aviation Legislation - II	50	50	100	60	--	60	4
	Minor								
	BSCAEROS2MRP12	Physics	25	25	100	30	--	30	2
	Open Elective (OE)								
	BSCAEROS2P13	Materials and Hardware-II	50	50	100	60	--	60	4
	Vocational Courses (VC)								
	BSCAEROS2P14	Electrical Fundamentals -I	25	25	50	30	--	30	2
	Skill Enhancement Courses (SEC)								
	BSCAEROS2P15	Maintenance Practices –II Practical	100	--	100	--	60	60	2
	Ability Enhancement Courses (AEC)								
	BSCAEROS2P16	Aviation Communication	25	25	50	30	--	30	2
	Value Education Course (VEC)								
	BSCAEROS2P17	Human factors – II	25	25	50	30	--	30	2
	Co-curricular Courses (CC)								
	BSCAEROS2P18	Helicopter Event Management	50		50		60	60	2
		Total	**375**	**225**	**650**	**270**	**120**	**390**	**22**

Semester – III									
	Subject Code	**Core Subject**	**Assessment Pattern**			**Teaching Hours**			
Semester - 3		**Topics**	**Internal Marks**	**External Marks**	**Total Marks**	**Theory Hours**	**Practical hours**	**Total Hours**	**Total Credits**
	Major Mandatory								
	BSCAEROS3MJP19	Helicopter aerodynamics structures & systems-II	50	50	100	60		60	4
	BSCAEROS3MJP20	Electrical fundamentals – II	25	25	50	30	--	30	2
	Minor								
	BSCAEROS3MRP21	Chemistry	25	25	50	30		30	2
	BSCAEROS3MRP22	Mathematics	25	25	50	30		30	2
	Open Elective (OE)								
	BSCAEROS3P23	Digital techniques & Electronic Instrument systems -I	25	25	50	30		30	2
	Vocational Courses (VC)								
	BSCAEROS3P24	Maintenance Practices - III	25	25	50	30	--	30	2
	Ability Enhancement Courses (AEC)								
	BSCAEROS3P25	Maintenance Practices Practical-III	50		50		60	60	2
	Field Project (FP)								
	BSCAEROS3P26	Helicopter aerodynamics structures–II Practical	100		100		60	60	2
	Co-curricular Courses (CC)								
	BSCAEROS3P27	Helicopter Maintenance Management	50		50		60	60	2
		Total	**375**	**175**	**550**	**210**	**180**	**390**	**20**

Semester – IV									
	Subject Code	**Core Subject**	**Assessment Pattern**			**Teaching Hours**			
Semester - 4		**Topics**	**Internal Marks**	**External Marks**	**Total Marks**	**Theory Hours**	**Practical hours**	**Total Hours**	**Total Credits**
	Major Mandatory								
	BSCAEROS4MJP28	Gas Turbine Engine-I	50	50	100	60		60	4
	BSCAEROS4MJP29	Digital Techniques & electronic Instrument Systems-II	25	25	50	30	--	30	2
	Minor								
	BSCAEROS4MRP30	Electronic Fundamentals	50	50	100	60	--	60	4
	Open Elective (OE)								
	BSCAEROS4P31	Electronics Fundamentals Practical	50		50		60	60	2
	Skill Enhancement Courses (SEC)								
	BSCAEROS4P32	Maintenance Practices - IV	25	25	50	30		30	2
	Ability Enhancement Courses (AEC)								
	BSCAEROS4P33	Gas Turbine engine-I Practical	100		100		60	60	2
	CEP								
	BSCAEROS4P34	Aviation Safety Awareness	50		50		60	60	2
	Co-curricular Courses (CC)								
	BSCAEROS4P35	Avionics	50		50		60	60	2
		Total	**400**	**150**	**550**	**180**	**240**	**420**	**20**

Semester – V									
	Subject Code	**Core Subject**	**Assessment Pattern**			**Teaching Hours**			
Semester - 5		**Topics**	**Internal Marks**	**External Marks**	**Total Marks**	**Theory Hours**	**Practical hours**	**Total Hours**	**Total Credits**
	Major Mandatory								
	BSCAEROS5MJP36	Gas Turbine Engine-II	50	50	100	60		60	4
	BSCAEROS5MJP37	Helicopter Aerodynamics structure & Systems-III	50	50	100	60		60	4
	Electives								
	BSCAEROS5P38	Aviation Management	50	50	100	60		60	4
	Minor								
	BSCAEROS5MRP39	Aviation Management Practical	100		100		120	120	4
	Vocational Courses (VC)								
	BSCAEROS5P40	Gas Turbine Engine-II Practical	100		100		60	60	2
	Field Project (FP)								
	BSCAEROS5P41	Field Project	50		50		60	60	2
		Total	**400**	**150**	**550**	**180**	**240**	**240**	**20**

Semester – VI									
	Subject Code	**Core Subject**	**Assessment Pattern**			**Teaching Hours**			
Semester - 6		**Topics**	**Internal Marks**	**External Marks**	**Total Marks**	**Theory Hours**	**Practical hours**	**Total Hours**	**Total Credits**
	Major Mandatory								
	BSCAEROS6MJP42	Aircraft Structure System	50	50	100	60		60	4
	BSCAEROS6MJP43	Aircraft Practices	50	50	100	60		60	4
	Electives								
	BSCAEROS6P44	Ground Handling Safety & Support system Practical	100		100		120	120	4
	Minor								
	BSCAEROS6MRP45	Aircraft structure and Engine Practical	100		100		120	120	4
	On Job Training (OJT)								
	BSCAEROS6P46	On Job Training	100		100		120	120	4
		Total	**400**	**100**	**500**	**120**	**360**	**360**	**20**

Semester – VII									
	Subject Code	**Core Subject**	**Assessment Pattern**			**Teaching Hours**			
Semester - 7		**Topics**	**Internal Marks**	**External Marks**	**Total Marks**	**Theory Hours**	**Practical hours**	**Total Hours**	**Total Credits**
	Major Mandatory								
	BSCAEROS7MJP47	Piston Aero plane aerodynamics and structures	50	50	100	60	--	60	4
	BSCAEROS7MJP48	Aircraft avionics snag analysis and rectification	100	--	100	--	120	120	4
	BSCAEROS7MJP49	Propulsion	25	25	50	30	--	30	2
	BSCAEROS7MJP50	Aircraft Accident and Incident investigation	50		50		60	60	2
	Electives								
	BSCAEROS7P51	Piston engine- I	50	50	100	60		60	4
	Minor								
	BSCAEROS7MRP52	Research Methodology	50	50	100	60		60	4
		Total	**325**	**175**	**500**	**210**	**180**	**390**	**20**

Semester - VIII									
	Subject Code	**Core Subject**	**Assessment Pattern**			**Teaching Hours**			
Semester - 8		**Topics**	**Internal Marks**	**External Marks**	**Total Marks**	**Theory Hours**	**Practical hours**	**Total Hours**	**Total Credits**
	Major Mandatory								
	BSCAEROS8MJP53	Turbine Aero plane aerodynamics and structures	50	50	100	60	--	60	4
	BSCAEROS8MJP54	Aircraft structure, engine snag analysis and rectification	100	--	100	--	120	120	4
	BSCAEROS8MJP55	Design standard and Type certification	25	25	50	30	--	30	2
	BSCAEROS8MJP56	Propeller	50		50		60	60	2
	Electives								
	BSCAEROS8P57	Piston engine-II	50	50	100	60		60	4
	On Job Training (OJT)								
	BSCAEROS8P58	Aircraft On job training	100		100		120	120	4
		Total	**375**	**125**	**500**	**150**	**300**	**450**	**20**

Sem.-I

SUBJECT-WISE SYLLABUS

Major Mandatory-2 credits			
Subject Code	**Semester-I**	**Total Hours**	**Session Hours**
Basic Aerodynamics			
1.1	Physics of the Atmosphere International Standard Atmosphere (ISA) application to aerodynamics	30	5
	Aerodynamics Airflow around a body; Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash, vortices, stagnation; The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio; Thrust, Weight, Aerodynamic Resultant; Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall; Aerofoil contamination including ice, snow, frost		10
	Theory of Flight Relationship between lift, weight, thrust and drag; Glide ratio; Steady state flights, performance; Theory of the turn; Influence of load factor: stall, flight envelope and Structural limitations; Lift augmentation.		10
	Flight Stability and Dynamics Longitudinal, lateral and directional stability (active and passive).		5
	References 1) Mechanics of Flight, AC Kermode 2) EASA Module- 08 Basic Aerodynamics, aircraft tech book co. 3) Aerodynamics, Clancy 4) A & P Technician Air Frame Text Book, Jeppesen 5) Helicopter Aerodynamics, R.W.Prouty		

Major Mandatory-4 credits			
Subject Code	**Semester-I**	**Total Hours**	**Session Hours**
Gas Turbine Engine Fundamentals & Helicopter Airframe Structure			
1.2	Fundamentals Potential energy, kinetic energy, Newton's laws of motion, Brayton cycle; The relationship between force, work, power, energy, velocity, acceleration; Constructional arrangement and operation of turbojet, turbofan, turboshaft, turboprop.	60	20
	Airframe Structures. Airworthiness requirements for structural strength; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision. Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning and anti-corrosive protection. Pylon, stabiliser and undercarriage attachments; Seat installation; Doors: construction, mechanisms, operation and safety devices; Windows and windscreen construction; Fuel storage; Firewalls; Engine mounts; Structure assembly techniques: riveting, bolting, bonding; Methods of surface protection, chromating, anodising, painting; Surface cleaning. Airframe symmetry: methods of alignment and symmetry checks.		40
	References 1) EASA Module-15 Gas Turbine Engine, Aircraft tech book co 2) Civil Aircraft Inspection Procedure (CAP 459)-Part II 3) Aviation Maintenance Technician Series (Power Plant), Dale Crane 4) Aviation Maint Technician Hand Book-General -9A, FAA 5) Aviation Maint Technician Hand Book-Airframe -15A, FAA 6) Aviation Maint Technician Hand Book-Power Plant -12A 7) Aviation Maint. Technician Handbook-Power plant, (Vol-II)		

Open Elective (OE)-4 credits			
Subject Code	**Semester- I**	**Total Hours**	**Session Hours**
Materials and Hardware-I			
1.3	Aircraft Materials — Ferrous Characteristics, properties and identification of common alloy steels used in aircraft; Heat treatment and application of alloy steels Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	60	10
	Aircraft Materials — Non-Ferrous Characteristics, properties and identification of common non-ferrous materials used in aircraft; Heat treatment and application of non-ferrous materials; Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.		10
	Aircraft Materials — Composite and Non-Metallic Composite and non-metallic other than wood and fabric Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft; Sealant and bonding agents The detection of defects/deterioration in composite and non-metallic material. Repair of composite and non-metallic material		10
	Corrosion Chemical fundamentals; Formation by, galvanic action process, microbiological, stress; Types of corrosion and their identification; Causes of corrosion; Material types, susceptibility to corrosion.		10
	Fasteners: Screw threads, Screw nomenclature; Thread forms, dimensions and tolerances for standard threads used in aircraft; Measuring screw threads		5
	Bolts, studs and screws Bolt types: specification, identification and marking of aircraft bolts, international standards; Nuts: self-locking, anchor, standard types; Machine screws: aircraft specifications; Studs: types and uses, insertion and removal; Self-tapping screws, dowels		10
	Locking devices Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins		5
	References 1) Aircraft Structure, Lalit Gupta 2) Aircraft tech book CO. EASA Module-06 3) Aviation Maint Technician Hand Book-General -9A 4) Aircraft Materials and Processes, George F. Titterton		

Vocational Courses (VC)- 2 credit			
Subject Code	**Semester - I**	**Total Hours**	**Session Hours**
Maintenance Practices -I			
1.4	Safety Precautions-Aircraft and Workshop: Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals. A instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards including knowledge on extinguishing agents.	30	5
	Workshop Practices: Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, standards of workmanship; Calibration of tools and equipment, calibration standards.		10
	Tools: Common hand tool types; Common power tool types; Operation and use of precision measuring tools; Lubrication equipment and methods. Operation, function and use of electrical general test equipment		10
	Avionic General Test Equipment: Operation, function and use of avionic general test equipment.		5
	References 1) Aircraft tech book co. EASA Module-07A Maintenance Practices 2) Aviation Maint Technician Hand Book-General -9A, FAA 3) Aviation Maint Technician Hand Book-Airframe -15A, FAA 4) Aviation Maint Technician Hand Book-Power Plant -12A, FAA 5) Aviation Maintenance Technician Hand book, FAA 6) FAA H 8083-30 Aviation Maint. Technician Handbook-General 7) FAA H- 8083-31 Aviation Maint. Technician Handbook-Airframe (Vol-II) 8) A & P Technician Air Frame Text Book, Jeppesen 9) Larry Reithmaier Aircraft Mechanics Shop Manual		
Skill Enhancement Courses (SEC) – 2 Credits			

Subject Code	Semester - I	Total Hours	Session Hours
Basic Workshop Practical-I			
1.5	Draw different projections of a given object – Three View Diagram simple object, structural member, and joints	30	3
	Fit and remove thread inserts. Surface filing, Groove filing, Notch formation, Shaping the job, Fitting the job with straight surfaces, Hexagonal fitting		3
	Use of precision measuring instruments, selection, handling of instruments and Marking Clamping and holding devices -Bench vice, Hand vice, Toolmaker's clamps and pliers Scales used, least count, Errors in micrometer reading Measurement with micrometer and error Correction Nomenclature, Different parts and material, Types of different micrometer, Sizes of micrometer		3
	Familiarization of Testing, cleaning and inspection of bearings Lubrication requirements of bearings Familiarization of Defects in bearings and their causes Testing, cleaning and inspection of bearings Lubrication requirements of bearings;		3
	Familiarization of Inspection of gears, backlash; Familiarization of Inspection of belts and pulleys, chains and sprockets Familiarization of Inspection of screw jacks, lever devices, push-pull rod systems. Familiarization of Inspection of gears, backlash; Familiarization of Inspection of belts and pulleys, chains and sprockets		3
	Visual inspection of various types of surface defects of aircraft structure and system components like bearings, gears, chain, pulley, spring and cables using simple aids like magnifying glass, light and mirror and record defects.		3
	Precautions to be observed when working, Hand Tools/Power Tools.		3
	Familiarization with the machine used in machine shop-Lathe Machine, Drilling Machine, Grinding Machine, Buffing Machine, Power sawing Machine		3
	Drilling holes in M.S. Sheet, Riming a hole in brass and bronze, Taping and dyeing screw threads in M.S. Material		3
	Safety precaution to be observed during practical in shops/labs.		3
Ability Enhancement Courses (AEC) – 2 Credits			

Subject Code	Semester - I	Total Hours	Session Hours
English Communication			
1.6	Introduction Theory of Communication, Types and modes of Communication	30	6
	Language of Communication Verbal and Non-verbal (Spoken and Written), Personal, Social and Business Barriers and Strategies Intra-personal, Inter personal and Group Communication		6
	Speaking Skills Monologue, Dialogue, Group Discussion, Effective Communication/ Mis- Communication, Interview, Public Speech		6
	Reading and Understanding, Close Reading, Comprehension, Summary Paraphrasing, Analysis and Interpretation, Translation (from Indian language to English and vice-versa), Literary/Knowledge Texts		6
	Writing Skills Documenting, Report Writing, Making notes, Letter writing		6
	References 1) The Ace of Soft Skills: Attitude, Communication and Etiquette for Success, Gopala swamy Ramesh 2) Language and Communication, Jack C. Richards, R.W. Schmidt 3) Talk Like TED: The 9 Public Speaking Secrets of the World's Top Minds, Carmine Gallo 4) Writing Skills: Methods and Practice by A R Kidwai Sherin Shervani, VIVA BOOKS – ORIGINALS 5) The Elements of Style, William Strunk Jr. and E.B. White 6) Professional Writing Skills: A Write It Well Guide, Natasha Terk		
Value Education Course (VEC) – 2 Credits			

Subject Code	Semester - I	Total Hours	Session Hours
Human Factors-I			
1.7	General The need to take human factors into account; Incidents attributable to human factors/human error; 'Murphy's' law	30	6
	Human Performance and Limitations Vision; Hearing; Information processing; Attention and perception; Memory; Claustrophobia and physical access		8
	Social Psychology Responsibility: individual and group; Motivation and de-motivation; Peer pressure; 'Culture' issues; Team working; Management, supervision and leadership		8
	Factors Affecting Performance Fitness/health;		

	Stress: domestic and work related; Time pressure and deadlines; Workload: overload and underload; Sleep and fatigue, shift work; Alcohol, medication, drug abuse.		8
	References 1) EASA Module-09 Human Factors 2) CAP 715 - An Introduction to Aircraft Maintenance Engineering Human Factors for CAR 66 3) CAP 716 - Aviation Maintenance Human Factors (EASA Part-145) 4) CAP 718 - Human Factors in Aircraft Maintenance and Inspection 5) ICAO Doc 9683 Human Factors Training Manual 6) ICAO Doc 9806 Human Factors Guidelines for Safety Audits Manual 7) ICAO Doc 9824 Human Factor Guidelines for A/c Maintenance Manual		
Indian Knowledge System (IKS) – 2 Credits			
Subject Code	**Semester - I**	**Total Hours**	**Session Hours**
Indian Aviation Legislation-I			
1.8	Regulatory Framework Role of International Civil Aviation Organization; The Aircraft Act and Rules made there under Role of the DGCA; Relationship between CAR-21, CAR-M, CAR-145, CAR-66, CAR 147, The Aircraft Rules (Applicable to Aircraft Maintenance and Release), Aeronautical Information Circulars (Applicable to Aircraft Maintenance and Release), CAR Sections 1 and 2	30	7
	CAR-66 Certifying Staff – Maintenance, Detailed understanding of CAR-66.		8
	CAR-145 — Approved Maintenance Organizations Detailed understanding of CAR-145 and CAR M Subpart F		8
	Aircraft Operations Commercial Air Transport/Commercial Operations Air Operators Certificates; Operators Responsibilities, in particular regarding continuing airworthiness and maintenance; Documents to be carried on board; Aircraft Placarding (Markings);		7
	References 1) DGCA Airworthiness Advisory Circulars 2) DGCA Civil Aviation Requirements (CAR) relevant to CAR-66 syllabus 3) DGCA Civil Aviation Procedures (CAP) relevant to CAR-66 syllabus 4) Govt. of India Aircraft Act 1934 5) Govt. of India Aircraft Rule 1937		
Co-curricular Courses (CC) – 2 Credits			
1.9	Basic Aerodynamics	30	

Major Mandatory (2 Credits)			
Subject Code	**Semester -II**	**Total Hours**	**Session Hours**
Helicopter Aerodynamics, Structures and Systems-I			
2.1	Theory of Flight — Rotary Wing Aerodynamics Terminology; Effects of gyroscopic precession; Torque reaction and directional control; Dissymmetry of lift, Blade tip stall; Translating tendency and its correction; Coriolis effect and compensation; Vortex ring state, power settling, over pitching; Auto-rotation; Ground effect	30	10
	Flight Control Systems Cyclic control; Collective control; Swash plate; Yaw control: Anti-Torque Control, Tail rotor, bleed air; Main Rotor Head: Design and Operation features; Blade Dampers: Function and construction; Rotor Blades: Main and tail rotor blade construction and attachment; Trim control, fixed and adjustable stabilizers; System operation: manual, hydraulic, electrical and flyby-wire; Artificial feel; Balancing and Rigging.		10
	Blade Tracking and Vibration Analysis Rotor alignment; Main and tail rotor tracking; Static and dynamic balancing; Vibration types, vibration reduction methods; Ground resonance.		5
	Transmissions Gear boxes, main and tail rotors; Clutches, free wheel units and rotor brake. Tail rotor drive shafts, flexible couplings, bearings, vibration dampers and bearing hangers		5
	References 1) J.Seddon -Basic Helicopter Aerodynamics 2) Jeppesen- A & P Technician Air Frame Text Book 3) John Fay -The Helicopter and How to Fly 4) Joseph Schafer -Basic helicopter maintenance		
Major Mandatory (4 Credits)			

Sem.-II

Subject Code	Semester -II	Total Hours	Session Hours
Indian Aviation Legislation-II			
2.2	Aircraft Certification General - Certification rules: such as FAA & EACS 23/25/27/29; Type Certification; Supplemental Type Certification; CAR-21 Design/Production Organization Approvals. Aircraft Modifications and repairs approval and certification, Permit to fly requirements	60	10
	Documents - Certificate of Airworthiness; Certificate of Registration; Noise Certificate; Weight Schedule; Radio Station Licence and Approval.		5
	CAR-M Detail understanding of CAR M provisions related to Continuing Airworthiness Detailed understanding of CAR-M.		15
	Applicable National and International Requirements Maintenance Programme, Maintenance checks and inspections; Master Minimum Equipment Lists, Minimum Equipment List, Dispatch Deviation Lists; Airworthiness Directives; Service Bulletins, manufacturers service information; Modifications and repairs; Maintenance documentation: maintenance manuals, structural repair manual, illustrated parts catalogue, etc.; Continuing airworthiness; Test flights; ETOPS /EDTO, maintenance and dispatch requirements; RVSM, maintenance and dispatch requirements RNP, MNPS Operations All Weather Operations, Category 2/3 operations and minimum equipment requirements.		5
	Aircraft Certification General - Certification rules: such as FAA & EACS 23/25/27/29; Type Certification; Supplemental Type Certification; CAR-21 Design/Production Organization Approvals. Aircraft Modifications and repairs approval and certification Permit to fly requirements		10
	Documents - Certificate of Airworthiness; Certificate of Registration; Noise Certificate; Weight Schedule; Radio Station License and Approval.		5
	Safety Management System, State Safety Program, Basic Safety Concepts, Hazards & Safety Risks, SMS Operation, SMS Safety performance Safety Assurance		5

	Fuel Tank Safety Special Federal Aviation Regulations (SFARs) from 14 CFR SFAR 88 of the FAA and of JAA TGL 47 Concept of CDCCL, Airworthiness Limitations Items (ALI)		5
	References 1) DGCA- Airworthiness Advisory Circulars 2) DGCA- Civil Aviation Requirements (CAR) relevant to CAR-66 syllabus 3) DGCA- Civil Aviation Procedures (CAP) relevant to CAR-66 syllabus 4) Govt. of India -Aircraft Act 1934 5) Govt. of India -Aircraft Rule 1937		
Minor (2 Credits)			
Subject Code	**Semester -II**	**Total Hours**	**Session Hours**
Physics			
2.3	Matter. Nature of Matter SI units Base Units Derived Units Matter and energy	30	2
	Chemical Nature of Matter Molecules Physical Nature of Matter		1
	States: Solid, Liquid, Gas		1
	Mechanics Forces, Moments and Couples Scalar and Vector Quantities Triangle of Forces Graphical Method Polygon of Forces Coplanar Forces Effect of an Applied Force Equilibriums		3
	Centre of Gravity		1
	Kinematics, Linear Movement. Speed, Velocity, Acceleration Equation of Linear Motion Gravitational Force		2
	Rotational Movement. Angular Velocity, Centripetal Force, Centrifugal Force		2
	Periodic Motion Pendulum Harmonic Motion, Spring –Mass Systems		2
	Dynamics Mass and Weight, Force Inertia, Work		3

	Power Brake Horse Power Shaft Horse Power Energy, Conservation of Energy, Heat		3
	Momentum, Impulsive Force Conservation of Momentum Changes in Momentum		2
	Gyroscopes, Rigidity,Precession ,Torque, Balancing of Rotating Masses		3
	Friction Dynamic and Static Friction Factors Affecting Frictional Forces Coefficient of Friction		2
	Thermodynamics Temperature scales, conduction, convection, radiation, Expansion of solids, Expansion of fluids, Gas Laws, Engine Cycles.		3
	References 1) Aviation Maint Technician Hand Book-General -9A, FAA 2) NCERT Physics 3) Concepts of Physics, HC Verma 4) Fundamentals of Physics, Halliday, Resnick and Walker		
Open Elective (4 Credits)			
Subject Code	Semester -II	Total Hours	Session Hours
Materials and Hardware –II			
2.4	Aircraft rivets Types of solid and blind rivets: specifications and identification, heat treatment.	60	10
	Pipes and Unions Identification of, and types of rigid and flexible pipes and their connectors used in aircraft; standard unions for aircraft hydraulic, fuel, oil, Pneumatic and air system pipes.		10
	Springs Types of springs, materials, characteristics and applications		4
	Bearings Purpose of bearings, loads, material, construction; Types of bearings and their application.		6
	Transmissions Gear types and their application; Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns; Belts and pulleys, chains and sprockets.		10
	Control Cables Types of cables; End fittings, turnbuckles and compensation devices; Pulleys and cable system components; Bowden cables; Aircraft flexible control systems		10

	Electrical Cables and Connectors; Cable types, construction and characteristics; High tension and co-axial cables; Crimping; Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes.		10
	References 1) J. A Enderson & Tatro- Shop Theory 2) Jeppesen- A & P Technician Air Frame Text Book 3) Joe Christy -Aircraft Construction Repair and Inspection 4) Lalit Gupta -Aircraft Structure 5) Larry Reithmaier- Aircraft Mechanics Shop Manual 6) Larry Reithmaier- Aircraft Repair Manual		
Vocational Course (2 Credits)			
Subject Code	Semester -II	Total Hours	Session Hours
Electrical Fundamentals-I			
2.5	Electron Theory Structure and distribution of electrical charges within: atoms, molecules, ions, compounds; Molecular structure of conductors, semiconductors and insulators.	30	3
	Static Electricity and Conduction Static electricity and distribution of electrostatic charges; Electrostatic laws of attraction and repulsion; Units of charge, Coulomb's Law; Conduction of electricity in solids, liquids, gases and a vacuum		5
	Electrical Terminology The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.		3
	Generation of Electricity, Production of electricity by the following methods: Light, heat, friction, pressure, chemical action, magnetism and motion.		4
	DC Sources of Electricity Construction and basic chemical action of: Primary cells, Secondary cells, lead acid cells, nickel cadmium cells, other alkaline cells; Cells connected in series and parallel; Internal resistance and its effect on a battery; Construction, materials and operation of thermocouples; Operation of photo-cells.		5
	DC Circuits Ohms Law, Kirchoff's Voltage and Current Laws; Calculations using the above laws to find resistance, voltage and current; Significance of the internal resistance of a supply		2
	Resistance/Resistor Resistance and affecting factors; Specific resistance; Resistor colour code, values and tolerances, preferred values, wattage ratings; Resistors in series and parallel; Calculation of total resistance using series, parallel and series parallel combinations;		3

	Operation and use of potentiometers and rheostats; Operation of Wheatstone Bridge. Positive and negative temperature coefficient conductance; Fixed resistors, stability, tolerance and limitations, Methods of construction; Variable resistors, thermistors, voltage dependent resistors; Construction of potentiometers and rheostats; Construction of Wheatstone Bridge;		
	Power Power, work and energy (kinetic and potential); Dissipation of power by a resistor; Power formula; Calculations involving power, work and energy.		3
	Capacitance/Capacitor Operation and function of a capacitor; Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating; Capacitor types, construction and function; Capacitor colour coding; Calculations of capacitance and voltage in series and parallel circuits; Exponential charge and discharge of a capacitor, Time constants; Testing of capacitors.		2
	References 1) E.H.J.Pallett -Aircraft Electrical System 2) Edward Hughes- Electrical & Electronics Technology 3) FAA -Aviation Maint Technician Hand Book General -9A 4) FAA -Aviation Maint Technician Hand Book-Airframe -15A		
Skill Enhancement Course (2 Credits)			
Subject Code	Semester -II	Total Hours	Session Hours
Maintenance Practices – II Practical			
	Fits and Clearances Drill sizes for bolt holes, classes of fits; Common system of fits and clearances; Schedule of fits and clearances for aircraft and engines; Limits for bow, twist and wear; Standard methods for checking shafts, bearings and other parts		5
	Electrical Cables and Connectors; Continuity, insulation and bonding techniques and testing; Use of crimp tools: hand and hydraulic operated; Testing of crimp joints; Connector pin removal and insertion; Co-axial cables: testing and installation precautions;		5

2.6	Wiring protection techniques: Cable looming and Loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding. Riveting; Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling; Inspection of riveted joints. Pipes and Hoses Bending and belling/flaring aircraft pipes; Inspection and testing Springs Inspection and testing of springs. Rod systems.of aircraft pipes and hoses; Installation and clamping of pipes. Bearings Testing, cleaning and inspection of bearings; Lubrication requirements of bearings; Defects in bearings and their causes.	30	10
	Inspection of gears, backlash; Inspection of belts and pulleys, chains and sprockets; Inspection of screw jacks, lever devices, push-pull Control Cables Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems. Composite and non-metallic Bonding practices;		5
	Environmental conditions Inspection method Welding, Brazing, Soldering and Bonding Soldering methods; inspection of soldered joints. Welding and brazing methods; Inspection of welded and brazed joints; Bonding methods and inspection of bonded joints.		5
	References 1) Kroes, Watkins, Delp -Aircraft Maintenance & Repair 2) Larry Reithmaier -Aircraft Mechanics Shop Manual 3) Larry Reithmaier- Aircraft Repair Manual 4) Thomas K Eismin -Aircraft Electricity & Electronics		
Ability Enhancement Course (2 Credits)			
Subject Code	Semester -II	Total Hours	Session Hours
Aviation Communication			
	History of Aviation Communication- Origination of communication in aviation; Understanding of Aviation Communication (and Its Importance); Transition of communication technologies in aviation industry; Introduction to modern aviation communication.		4

2.7	Types and functions of aviation communication- verbal & Non-verbal communication; Dirty dozen. Verbal: Aural, Written communication, Communication through visual perception, logical, social, solitary; Previewing, KWL table, active listening, REAP method; Three essential barriers in verbal communication— Judgment, giving a solution, Low involvement in addressing the problem being the subject of communication. Non-Verbal: Non-verbal Communication and Body Language: Forms of non-verbal communication; Interpreting body-language cues; Kinesics; Proxemics; Chronemics; Effective use of body language, Communication in a multi-cultural environment. Flow of communication; Communication networks, Types of barriers; Miscommunication	30	6
	Communication's functions- Communication as a source of information; Communication as the factor which establishes interpersonal relationships; Communication as a factor which establishes predictable behavior patterns; Communication maintains attention to executing the task and monitoring; Communication is a management tool. Selected aspects related to ensuring the desired level of verbal communication effectiveness within air crew; Factors affecting effective communication— the level of the recipient's awareness, discrepancies between verbal and nonverbal communication, lack of clearly defined purpose of communication, message code mismatch, differences in perceiving (perception), differences in knowledge and skills, too difficult environmental conditions, excessive agitation, the tendency to over-interpretation, lack of mutual trust.		6
	Basics of aviation communication- ICAO Abbreviations from A TO Z.; Aviation phonetics; Definitions; ATA chapters; Types of Frequencies used in communication; Transmission of numbers, Letters, time; pronunciation of numbers, Use of six digits; Standard Words and Phrases.		6
	Different types of Communication Phraseology - General Phraseology; Aerodrome phraseology for helicopters; Departure phraseology; Arrival phraseology; Emergency phraseology; Readability Scale & their meaning VHF phraseology examples.		8
	References 1) Air regulations for CPL/ATPL by R. K. BALI 2) ICAO DOC 9432 AN/925 manual of radio telephony 3) CAP 413 Radio telephony manual 4) ICAO DOC 8400		
Value Education Course (2 Credits)			

Subject Code	Semester -II	Total Hours	Session Hours
Human Factors-II			
2.8	Physical Environment Noise and fumes; Illumination; Climate and temperature; Motion and vibration; Working environment.	30	6
	Tasks Physical work; Repetitive tasks; Visual inspection; Complex systems.		5
	Communication Within and between teams; Work logging and recording; Keeping up to date, currency; Dissemination of information.		7
	Human Error Error models and theories; Types of error in maintenance tasks; Implications of errors (i.e. accidents) Avoiding and managing errors.		7
	Hazards in the Workplace Recognizing and avoiding hazards; Dealing with emergencies.		5
	References 1) William Shepard- Human Factor Guide for Aircraft Maintenance (FAA) 2) Aircraft tech book co.- EASA Module-09 Human Factors 3) CAA CAP 715 - An Introduction to Aircraft Maintenance Engineering Human Factors for JAR 66 4) AA CAP 716 - Aviation Maintenance Human Factors (EASA Part-145) 5) ICAO Doc 9683 -Human Factors Training Manual 6) ICAO Doc 9806 -Human Factors Guidelines for Safety Audits Manual		
Co- Curricular Course (2 credits)			
2.9	Helicopter Event Management	30	30

Sem.-III

Major Mandatory (4 credits)			
Subject Code	**Semester-III**	**Total Hours**	**Session Hours**
Helicopter Aerodynamics Structures & Systems-II			
3.1	Air Conditioning (ATA 21) Air supply Sources of air supply including engine bleed and ground cart; Air Conditioning Air conditioning systems; Distribution systems; Flow and temperature control systems; Protection and warning devices.	60	15
	Equipment and Furnishings (ATA 25) Emergency equipment requirements; Seats, harnesses and belts; Lifting systems. Emergency flotation systems; Cabin lay-out, cargo retention; Equipment lay-out; Cabin Furnishing Installation.		10
	Fire Protection (ATA 26) Fire and smoke detection and warning systems; Fire extinguishing systems; System tests.		10
	Instruments/Avionic Systems Instrument Systems (ATA 31) Pitotstatic: altimeter, air speed indicator, vertical speed indicator; Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; Compasses: direct reading, remote reading; Vibration indicating systems — HUMS; Glass Cockpit, Other aircraft system indication.		10
	Avionic Systems Fundamentals of system layouts and operation of: Auto Flight (ATA 22); Communications (ATA 23); Navigation Systems (ATA 34).		05
	Electrical Power (ATA 24) Batteries Installation and Operation; DC power generation, AC power generation; Emergency power generation; Voltage regulation, Circuit protection, Power distribution; Inverters, transformers, rectifiers; External/Ground power.		10
	References 1) Jeppesen- Helicopter maintenance 2) John Fay -The Helicopter and How to Fly 3) Joseph Schafer -Basic helicopter maintenance 4) Aviation Maint Technician Hand Book-General -9A, FAA 5) Aviation Maint Technician Hand Book-Airframe -15A, FAA 6) Aviation Maint Technician Hand Book-Power Plant -12A, FAA 7) Aviation Maintenance Technician Hand book, FAA		

Major Mandatory (2 credits)			
Subject Code	Semester- III	Total Hours	Session Hours
Electrical fundamentals –II			
3.2	Inductance/Inductor - Faraday's Law; Action of inducing a voltage in a conductor moving in a magnetic field; Induction principles; Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductors turns; Mutual induction; The effect the rate of change of primary current and mutual inductance has on induced voltage; Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other; Lenz's Law and polarity determining rules; Back emf, self-induction; Saturation point; Principle uses of inductors;	30	7
	DC Motor/Generator Theory - Basic motor and generator theory; Construction and purpose of components in DC generator; Operation of, and factors affecting output and direction of current flow in DC generators; Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors; Series wound, shunt wound and compound motors; Starter Generator construction.		3
	Resistive (R), Capacitive (C) and Inductive (L) Circuits - Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel; Power dissipation in L, C and R circuits; Impedance, phase angle, power factor and current calculations; True power, apparent power and reactive power calculations.		2
	Transformers- Transformer construction principles and operation; Transformer losses and methods for overcoming them; Transformer action under load and no-load conditions; Power transfer, efficiency, polarity markings; Calculation of line and phase voltages and currents; Calculation of power in a three phase system; Primary and Secondary current, voltage, turns ratio, power, efficiency; Auto transformers.		4
	Filters Operation, application and uses of the following filters: low pass, high pass, band pass, band stop.		4
	AC Generators -		

	Rotation of loop in a magnetic field and waveform produced; Operation and construction of revolving armature and revolving field type AC generators; Single phase, two phase and three phase alternators; Three phase star and delta connections advantages and uses; Permanent Magnet Generators.		5
	AC Motors - Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and polyphase; Methods of speed control and direction of rotation; Methods of producing a rotating field: capacitor, inductor, shaded or split pole.		5
	References 1) E.H.J.Pallett -Aircraft Electrical System 2) Edward Hughes- Electrical & Electronics Technology 3) FAA -Aviation Maint Technician Hand Book General -9A 4) FAA -Aviation Maint Technician Hand Book-Airframe -15A		
Minor (2 credits)			
Subject Code	**Semester- III**	**Total Hours**	**Session Hours**
Chemistry			
3.3	Corrosion: Introduction to Corrosion and its control, Causes and different types of corrosion and effects of corrosion. Chemical, Electrochemical corrosion, Corrosion reactions, Factors affecting corrosion, Nature of metal Humidity, Effect of oxidant, Corrosion control methods Surface coatings, Methods of application on metals, Hot dipping, Galvanizing, Tinning, Cladding, Electroplating, Organic surface coatings, Paints constituents and functions.	30	10
	Chemical composition of batteries: Introduction, definition, battery characteristics, classification primary, secondary and reserve batteries with examples. Modern batteries-construction, working and applications of Nickel-Cadmium and Lead Acid Battery. Specific gravity and hydrometer.		10
	Chemical fuels: Definition, classification; calorific value-definition, Gross and Net calorific values (SI units). Determination of calorific value of a solid/liquid fuel using Bomb calorimeter, numerical problems, Petroleum cracking- fluidized catalytic cracking.		10
	References 1) NCERT Chemistry		
Minor (2 credits)			
Subject Code	**Semester- III**	**Total Hours**	**Session Hours**
Mathematics			
	Arithmetic: Arithmetical terms and signs, methods of multiplication and division, fractions and decimals, factors and multiples, weights, measures and conversion factors, ratio and proportion, averages and percentages, areas and volumes, squares, cubes, square and cube roots.		10

3.4	Algebra: Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions. Linear equations and their solutions; Indices and powers, negative and fractional indices; Binary and other applicable numbering systems; Simultaneous equations and second-degree equations with one unknown; Logarithms.	30	10
	Geometry: Simple geometrical constructions; Graphical representation; nature and uses of graphs, graphs of equations/functions; Simple trigonometry; trigonometrical relationships, rectangular and polar coordinates.		10
	References 1) EASA Module 1 book 2) NCERT 11th Standard Mathematics book 3) NCERT 12th Standard Mathematics book		
Open Elective (OE)-2 credits			
Subject Code	Semester- III	Total Hours	Session Hours
Digital Techniques & Electronic Instrument Systems-I			
3.5	Electronic Instrument Systems Typical systems arrangements and cockpit layout of electronic instrument systems.	30	5
	Numbering Systems Numbering systems: binary, octal and hexadecimal; Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa.		10
	Data Conversion Analogue Data, Digital Data; Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types		5
	Data Buses Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications.		5
	Logic Circuits Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams. Interpretation of logic diagrams.		5

	References 1) AIRCRAFT TECH BOOK CO. EASA Module-05Electronic Instrument System 2) Basic Electronics, Bernard Grob 3) CAIP II Civil Aircraft Inspection Procedure (CAP 459)- Part II 4) David Herris Flight Instrument & AFCA 5) E.H.J. Pallett Aircraft Instruments 6) E.H.J. Pallett Aircraft Instruments and Integrated System 7) Electrical & Electronics Technology, Edward Hughes 8) Introduction to Microprocessor, Mathur 9) Aircraft Digital Electronic and Computer System, Mike Tooley 10) Aircraft Electrical & Electronic Systems, Mike Tooley & David Wyatt 11) Principles of Electronics V K Mehta		

Vocational Course (2 Credits)

Subject Code	**Semester- III**	**Total Hours**	**Session Hours**
Maintenance Practices-III			
3.6	Disassembly, Inspection, Repair and Assembly Techniques Types of defects and visual inspection techniques. Corrosion removal, assessment and reprotection.	30	03
	General repair methods, Structural Repair Manual; Ageing, fatigue and corrosion control program;		03
	Non-destructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and borescope methods.		02
	Disassembly and re-assembly techniques.		02
	Trouble shooting techniques		02
	Abnormal Events Inspections following lightning strikes and HIRF penetration. Inspections following abnormal events such as heavy landings and flight through turbulence.		08
	Maintenance Procedures Maintenance planning; Modification procedures; Stores procedures; Certification/release procedures; Interface with aircraft operation; Maintenance Inspection/Quality Control/Quality Assurance; Additional maintenance procedures. Control of life limited components		10
	References 1) Aircraft tech book co. EASA Module-07A Maintenance Practices 2) Aviation Maint Technician Hand Book-General -9A, FAA 3) Aviation Maint Technician Hand Book-Airframe -15A, FAA 4) Aviation Maint Technician Hand Book-Power Plant -12A, FAA 5) Aviation Maintenance Technician Hand book, FAA 6) FAA H 8083-30 Aviation Maint. Technician Handbook-General		

	7) FAA H- 8083-31 Aviation Maint. Technician Handbook- Airframe (Vol-II) 8) A & P Technician Air Frame Text Book, Jeppesen 9) Larry Reithmaier Aircraft Mechanics Shop Manual		
Ability Enhancement Course (2 Credits)			
Subject Code	Semester- III	Total Hours	Session Hours
Maintenance Practices-III Practical			
3.7	Familiarize with Types of defects and visual inspection techniques. Familiarize with Corrosion removal, assessment and reprotection	30	10
	Familiarize with General repair methods, Structural Repair Manual; Ageing, fatigue and corrosion control programmes		10
	Familiarize with Additional maintenance procedures, Control of life limited components		10
Field Project (2 credits)			
Subject Code	Helicopter Aerodynamic Structures-II Practical	Total Hours	Session Hours
Helicopter aerodynamics structures & systems-II practical			
3.8	Locate & identify, familiarize- Pitot static tube on helicopter Altimeter elements used in an instrument Air speed indicator element used in an instrument Vertical speed indicator element used in an instrument Operation of Artificial horizon/gyro horizon	30	4
	Familiarization with Auto Flight in commercial aircraft		4
	Familiarization with basic principle of Communication & navigation levels of frequencies, different waves used in communication & navigation (sky wave, space wave, ground wave)		3
	Locate & identify, Familiarize - Batteries used in helicopter (lead acid/ Ni-cad) Positive & negative plates of charge & discharge battery Ribs, separator, vent caps Associate in charging & discharging of a battery, replenishing of battery		5
	Familiarization with constant current & constant voltage charging		5
	Familiarization with Associate in trickle charging of battery		4
	Demonstration &Familiarization with DC power generation, AC power generation Inverters, rectifiers Demonstration & Familiarization with transformers Associate in handling & maintenance of battery		5
Co- Curricular Course (2 credits)			
Subject Code	Semester- III	Total Hours	Session Hours
Helicopter Maintenance Management			
3.9	Practical	30	30

Sem.-IV

Major Mandatory- 4 credits			
Subject Code	Semester - IV	Total Hours	Session Hours
Gas Turbine Engine-I			
4.1	Engine Performance Gross thrust, net thrust, choked nozzle thrust, thrust distribution, resultant thrust, thrust horsepower, equivalent shaft horsepower, specific fuel consumption; Engine efficiencies; By-pass ratio and engine pressure ratio; Pressure, temperature and velocity of the gas flow; Engine ratings, static thrust, influence of speed, altitude and hot climate, flat rating, limitations.	60	10
	Inlet Compressor inlet ducts Effects of various inlet configurations; Ice protection.		10
	Compressors Axial and centrifugal types; Constructional features and operating principles and applications; Fan balancing; Operation: Causes and effects of compressor stall and surge; Methods of air flow control: bleed valves, variable inlet guide vanes, variable stator vanes, rotating stator blades; Compressor ratio.		15
	Combustion Section Constructional features and principles of operation.		5
	Turbine Section Operation and characteristics of different turbine blade types Blade to disk attachment; Nozzle guide vanes; Causes and effects of turbine blade stress and creep.		10
	Exhaust Constructional features and principles of operation; Convergent, divergent and variable area nozzles; Engine noise reduction; Thrust reversers.		10
	References 1) EASA Module-15 Gas Turbine Engine, Aircraft tech book co 2) Civil Aircraft Inspection Procedure (CAP 459)-Part II 3) Aviation Maintenance Technician Series (Power Plant), Dale Crane 4) Aviation Maint Technician Hand Book-General -9A, FAA 5) Aviation Maint Technician Hand Book-Airframe -15A, FAA 6) Aviation Maint Technician Hand Book-Power Plant -12A 7) Aviation Maint. Technician Handbook-Power plant, (Vol-II)		

Major Mandatory- 2 credits			
Subject Code	Semester - IV	Total Hours	Session Hours
Digital Techniques & Electronic Instrument Systems-II			
4.2	Basic Computer Structure (a) Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM); Computer technology (as applied in aircraft systems). (b) Computer related terminology; Operation, layout and interface of the major components in a micro-computer including their associated bus systems; Information contained in single and multi-address instruction words; Memory associated terms; Operation of typical memory devices; Operation, advantages and disadvantages of the various data storage systems.	30	4
	Microprocessors Functions performed and overall operation of a microprocessor; Basic operation of each of the following microprocessor elements: Control and processing unit, clock, register, arithmetic logic unit.		2
	Integrated Circuits Operation and use of encoders and decoders Function of encoder types Uses of medium, large and very large scale integration.		2
	Multiplexing Operation, application and identification in logic diagrams of multiplexers and demultiplexers.		2
	Fibre Optics Advantages and disadvantages of fibre optic data transmission over electrical wire propagation; Fibre optic data bus; Fibre optic related terms; Terminations; Couplers, control terminals, remote terminals; Application of fibre optics in aircraft systems.		3
	Electronic Displays Principles of operation of common types of displays used in modern aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display.		4
	Electrostatic Sensitive Devices Special handling of components sensitive to electrostatic discharges; Awareness of risks and possible damage, component and personnel anti-static protection devices.		3
	Software Management Control - Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programs.		2
	Electromagnetic Environment Influence of the following phenomena on maintenance practices for electronic system: EMC-Electromagnetic Compatibility EMI-Electromagnetic Interference		3

	HIRF-High Intensity Radiated Field Lightning/lightning protection		
	Typical Electronic/Digital Aircraft Systems General arrangement of typical electronic/digital aircraft systems and associated BITE (Built in Test Equipment) testing such as: ACARS-ARINC Communication and Addressing and Reporting Sys. ECAM-Electronic Centralised Aircraft Monitoring EFIS-Electronic Flight Instrument System EICAS-Engine Indication and Crew Alerting System FBW-Fly by Wire, FMS-Flight Management System GPS-Global Positioning System, IRS-Inertial reference system TCAS-Traffic Collision Avoidance system Integrated modular Avionics, Cabin System, Information system		5
	References 1) AIRCRAFT TECH BOOK CO. EASA Module-05Electronic Instrument System 2) Basic Electronics, Bernard Grob 3) CAIP II Civil Aircraft Inspection Procedure (CAP 459)- Part II 4) David Herris Flight Instrument & AFCA 5) E.H.J. Pallett Aircraft Instruments 6) E.H.J. Pallett Aircraft Instruments and Integrated System 7) Electrical & Electronics Technology, Edward Hughes 8) Introduction to Microprocessor, Mathur 9) Aircraft Digital Electronic and Computer System, Mike Tooley 10) Aircraft Electrical & Electronic Systems, Mike Tooley & David Wyatt 11) Principles of Electronics V K Mehta		

Minor – 4 Credits

Subject Code	**Semester - IV**	**Total Hours**	**Session Hours**
Electronic Fundamentals			
4.3	Semiconductors Diodes (a) Diode symbols; Diode characteristics and properties; Diodes in series and parallel; Main characteristics and use of silicon controlled rectifiers (thyristors), light emitting diode, photo conductive diode, varistor, rectifier diodes; Functional testing of diodes.	60	6
	(b) Materials, electron configuration, electrical properties; P and N type materials: effects of impurities on conduction, majority and minority characters; PN junction in a semiconductor, development of a potential across a PN junction in unbiased, forward biased and reverse biased conditions;Operation and function of diodes in the following circuits: clippers, clampers,full and half wave rectifiers, bridge rectifiers, voltage doublers and triplers; Detailed operation and characteristics of the following devices: silicon controlled rectifier (thyristor), light emitting diode, Shottky diode, photo		10

	conductive diode, varactor diode, varistor, rectifier diodes, Zener diode.		
	Transistors (a) Transistor symbols; Component description and orientation; Transistor characteristics and properties. (b) Construction and operation of PNP and NPN transistors; Base, collector and emitter configurations; Testing of transistors. Basic appreciation of other transistor types and their uses. Application of transistors: classes of amplifier (A, B, C); Simple circuits including: bias, decoupling, feedback and stabilisation; Multistage circuit principles: cascades, push-pull, oscillators, multivibrators, flip-flop circuits.		10
	Integrated Circuits (a) Description and operation of logic circuits and linear circuits/operational amplifiers.		6
	(b) Description and operation of logic circuits and linear circuits; Introduction to operation and function of an operational amplifier used as: integrator, differentiator, voltage follower, comparator; Operation and amplifier stages connecting methods: resistive capacitive, inductive (transformer), inductive resistive (IR), direct; Advantages and disadvantages of positive and negative feedback.		10
	Printed Circuit Boards - Description and use of printed circuit boards		8
	Servomechanisms (a) Understanding of the following terms: Open and closed loop systems, feedback, follow up, analogue transducers; Principles of operation and use of the following synchro system components/features: resolvers, differential, control and torque, transformers, inductance and capacitance transmitters.		10
	References 1) AIRCRAFT TECH BOOK CO. EASA Module- 04 Electrical Fundamental Aviation 2) Maintenance Technician Certification Series 3) Electrical Technology, B.L.Theraja 4) Basic Electronics, Bernard Grob 5) E.H.J. Pallett Aircraft Instruments 6) E.H.J. Pallett Aircraft Instruments and Integrated System 7) Electronic Communication System, George Kennedy 8) Civil Avionics Systems, IIan Moir and Allan Seabridge 9) Jeppesen Avionics Fundamental 10) Millman and Halkias Integrated Electronics 11) V K Mehta Principles of Electronics		
Open Elective (OE)-2 credits			

Subject Code	Semester - IV	Total Hours	Session Hours
Electronic Fundamentals Practical			
4.4	Familiarization with Diode, Symbols & Identification Code.	30	5
	Familiarization with Types of Diode (Zener ,Photo,LED,Varistor etc).		6
	Familiarization with Diode Testing. Familiarization with Diode in Series & parallel		6
	Familiarization with PNP & NPN Transistor Familiarization with Forward Biased & Reverse Biased		6
	Familiarization with Ammeter, Voltmeter, Ohm meter, Continuity tester, multimeter.		6
	Safety precaution to be observed during practical in shops/labs		1
Skill Enhancement Courses(SEC)-2 Credits			
Subject Code	Semester - IV	Total Hours	Session Hours
Maintenance Practices-IV			
4.5	Engineering Drawings, Diagrams and Standards Drawing types and diagrams, their symbols, dimensions, tolerances and projections; Identifying title block information	30	8
	Microfilm, microfiche and computerised presentations;		6
	Specification 100 of the Air Transport Association (ATA) of America;		8
	Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL;		4
	Wiring diagrams and schematic diagrams.		4
	References 1) Engineering drawing, ND Bhat 2) Aircraft tech book co. EASA Module-07A Maintenance Practices 3) Aviation Maint Technician Hand Book-General -9A, FAA 4) Aviation Maint Technician Hand Book-Airframe -15A, FAA 5) Aviation Maint Technician Hand Book-Power Plant -12A, FAA 6) Aviation Maintenance Technician Hand book, FAA 7) FAA H 8083-30 Aviation Maint. Technician Handbook-General 8) FAA H- 8083-31 Aviation Maint. Technician Handbook-Airframe (Vol-II) 9) A & P Technician Air Frame Text Book, Jeppesen 10) Aircraft Mechanics Shop Manual, Larry Reithmaier		
Ability Enhancement Courses(AEC)-2 Credits			
Subject Code	Semester - IV	Total Hours	Session Hours
Gas Turbine Engine-I Practical			
4.6	Locate, Identify and familiarize Thrust generating component	30	3
	Familiarize with Engine inlet system		4
	Familiarize with Compressor of Turbo shaft engine		4
	Locate and familiarize Stator and rotor vanes		4
	Familiarize with combustion chamber casing		4

	Location of turbine section		4
	Turbine blade attachments fir-tree type		4
	Cleaning of outer ducts		3
CEP-2 Credits			
Subject Code	**Semester - IV**	**Total Hours**	**Session Hours**
4.7	Aviation Safety Awareness	30	30
Co-curricular Courses (CC)-2 Credits			
Subject Code	**Semester - IV**	**Total Hours**	**Session Hours**
4.8	Avionics	30	30
Major Mandatory-4 credits			
Subject Code	**Semester-V**	**Total Hours**	**Session Hours**
Gas Turbine Engine-II			
5.1	Bearings and Seals Constructional features and principles of operation.	60	04
	Lubricants and Fuels Properties and specifications; Fuel additives; Safety precautions.		04
	Lubrication Systems System operation/lay-out and components.		04
	Fuel Systems Operation of engine control and fuel metering systems including electronic engine control (FADEC); Systems lay-out and components.		04
	Air Systems Operation of engine air distribution and anti-ice control systems, including internal cooling, sealing and external air services.		04
	Starting and Ignition Systems Operation of engine start systems and components; Ignition systems and components; Maintenance safety requirements.		04
	Engine Indication Systems Exhaust Gas Temperature/Interstage Turbine Temperature; Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; Oil pressure and temperature; Fuel pressure and flow; Engine speed; Vibration measurement and indication; Torque; Power.		04
	Power Augmentation Systems - Operation and applications; Water injection, water methanol; Afterburner systems		04
	Turbo-prop Engines Gas coupled/free turbine and gear coupled turbines; Reduction gears;		04

	Integrated engine and propeller controls; Overspeed safety devices.		
	Turbo-shaft engines Arrangements, drive systems, reduction gearing, couplings, control systems.		04
	Auxiliary Power Units (APUs) Purpose, operation, protective systems.		04
	Power plant Installation Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.		04
	Fire Protection Systems Operation of detection and extinguishing systems.		04
	Engine Monitoring and Ground Operation Procedures for starting and ground run-up; Interpretation of engine power output and parameters; Trend (including oil analysis, vibration and boroscope) monitoring; Inspection of engine and components to criteria, tolerances and data specified by engine manufacturer; Compressor washing/cleaning; Foreign Object Damage.		04
	Engine Storage and Preservation Preservation and depreservation for the engine and accessories/ systems		04
	References 1) EASA Module-15 Gas Turbine Engine 2) Civil Aircraft Inspection Procedure (CAP 459)-Part II		
Major Mandatory-4 credits			
Subject Code	Semester-V	Total Hours	Session Hours
Helicopter aerodynamics structures & systems-III			
5.2	Fuel Systems System lay-out; Fuel tanks; Supply systems; Dumping, venting and draining; Cross-feed and transfer; Indications and warnings;	60	05
	Hydraulic Power System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical, pneumatic; Emergency pressure generation; Filters Pressure Control; Power distribution;		10

	Indication and warning systems; Interface with other systems		
	Ice and Rain Protection Ice formation, classification and detection; Anti-icing and de-icing systems: electrical, hot air and chemical; Rain repellent and removal; Probe and drain heating. Wiper system		03
	Landing Gear Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, tyres, brakes; Steering; Air-ground sensing Skids, floats.		10
	Lights External: navigation, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.		02
	Pneumatic/Vacuum System lay-out; Sources: engine, compressors, reservoirs, ground supply.; Pressure control; Distribution; Indications and warnings; Interfaces with other systems		05
	Integrated Modular Avionics Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionics Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indication, Oleo Pressure Indication, Brake Temperature Monitoring, etc. Core System; Network Components.		10
	On Board Maintenance Systems Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring)		05
	Information Systems		

	The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage and controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display. Typical examples include Air Traffic and Information Management Systems and Network Server Systems. Aircraft General Information System; Flight Deck Information System; Maintenance Information System; Passenger Cabin Information System; Miscellaneous Information System		10
	References 1) Aviation Maintenance Technician Series (Power Plant) 2) Aircraft Instruments 3) Aircraft Instruments and Integrated System 4) Automatic Flight Control 5) Aircraft Electrical System 6) Electrical & Electronics Technology 7) Aviation Maint Technician Hand Book-General -9A 8) Aviation Maint Technician Hand Book-Airframe -15A 9) Air frame Test Guide (Mechanic) 10) Aviation Maintenance Technician Hand book 11) Aviation Maint. Technician Handbook-Powerplant (Vol-II) 12) Aviation Maint. Technician Handbook-Airframe (Vol-I)		
Electives -4 credits			
Subject Code	Semester-V	Total Hours	Session Hours
Aviation Management			
5.3	Production, planning and control system Fleet / MRO Management. Material management. Aircraft Inventory control. Aircraft preservation management. Handling of dangerous goods. Good maintenance practices. Standard practices & management. Time and Motion study. Ergonomic layouts for maintenance. Cockpit resource management. Safety & Accident investigation. Insurance policy procedures in aviation. Study of EASA-145 & FAR -145 systems. ETOPS. Flight management. Project on Progressive vs Block maintenance. Control of ground equipments. Costing & accounting. Base management & MIS. Human resources.	60	60

	Leadership & personal management. Case study of industry standards. Health Safety & Environment techniques (HSE).		
	References 1) Aviation Maintenance management by Harry A.Kinnison,Ph.D.		
Minor (4 Credits)			
Subject Code	Semester -V	Total Hours	Session Hours
Aviation Management Practical			
5.4	Familiarization with airport functioning	60	10
	Familiarization with safety & emergency procedures in A/C as well as On ground.		10
	Familiarization with Airline operation & scheduling .		10
	Familiarization with coordination & communication with between crew members.		10
	Familiarization with airline industry.		10
	Familiarization with BCAS & Regulatory body.		10
VC (2 Credits)			
Subject Code	Semester -V	Total Hours	Session Hours
Gas turbine engine-II Practical			
5.5	Identify normal & electronic fuel control, monitoring and indication system	30	03
	Familiarization with methods of engine starting and ignition systems.		03
	Operation check of Engine indicating systems.		03
	Familiarization of APU starting and shutdown procedure		03
	Familiarization with power plant removal & installation		03
	Visual Inspection of engines		03
	Typical engine control rigging.		03
	Testing of engine fire monitoring and extinguishing operation		03
	Study engine storage and preservation		03
	Safety precaution to be observed during practical in shops/labs.		03
	References 1) EASA Module-15 Gas Turbine Engine 2) Civil Aircraft Inspection Procedure (CAP 459)- Part II		
Field Project (2 Credits)			
Subject Code	Semester -V	Total Hours	Session Hours
5.6	Line maintenance	30	30

Major mandatory (4 credits)			
Subject Code	Semester – VI	Total Hours	Session Hours
Aircraft Structure System			
6.1	Snag Analysis & Rectification (Mechanical) The snags in the aircrafts pertaining to syllabus covered in the semester I to Semester V for aircraft structure systems namely hydraulics, pneumatics, ice & rain protection, landing gear, oxygen, fire protection, air conditioning, and cabin pressurization. The snag analysis and rectification.	60	30
	Snag Analysis & Rectification (Avionics) The snags in the aircrafts pertaining to syllabus covered in the semester I to Semester V for aircraft structure systems namely electrical, instrument, radio & digital systems. The snag analysis and rectification.		30
	References 1) Aviation Maint Technician Hand Book-General -9A, FAA 2) Aviation Maint Technician Hand Book-Airframe -15A, FAA 3) Aviation Maint Technician Hand Book-Power Plant -12A, FAA 4) CAIP II Civil Aircraft Inspection Procedure (CAP 459)- Part I 5) CAIP II Civil Aircraft Inspection Procedure (CAP 459)- Part II		
Major mandatory (4 credits)			
Subject Code	Semester – VI	Total Hours	Session Hours
AIRCRAFT PRACTICES			
6.2	Aircraft Engine & Engine fuel system – Repair, maintenance. The snags in the aircrafts pertaining to syllabus covered in the semester I to Semester V for aircraft structure systems namely Aircraft engines, Fuel system, Fuel metering system, lubrication system.	60	30
	Aircraft Engine & Engine fuel system- Snag Analysis and Rectification		30
	References 1) Aviation Maint Technician Hand Book-General -9A, FAA 2) Aviation Maint Technician Hand Book-Airframe -15A, FAA 3) Aviation Maint Technician Hand Book-Power Plant -12A, FAA 4) CAIP II Civil Aircraft Inspection Procedure (CAP 459)- Part I 5) CAIP II Civil Aircraft Inspection Procedure (CAP 459)- Part II		
Elective (4 Credits)			
Subject Code	Semester – VI	Total Hours	Session Hours
Ground handling safety & support system (Practical)			
6.3	Ground handling & Documentation Ground handling & ground support and safety equipments, Engine starting precaution, turbine engines, use of equipment for hydraulic power, air conditioning, electrical power, fuelling of aircraft, precautions for servicing oil/ fuel, servicing of oxygen system,	60	60

	lashing & mooring of light and heavy aircraft, taxiing and marshalling, jacking of aircraft, cold weather handling		
Minor (4 credits)			
Subject Code	Semester – VI	Total Hours	Session Hours
Aircraft structure & engine practical			
6.4	practical	60	60
OJT (4 Credits)			
Subject Code	Semester – VI	Total Hours	Session Hours
6.5	On Job Training	120	120

Major Mandatory-4 credits			
Subject Code	Semester-VII	Total Hours	Session Hours
Piston Aero plane aerodynamics and structures			
	Theory of Flight Light Aircraft	60	5
7.1	Aeroplane Aerodynamics and Flight Controls Operation and effect of: —roll control: ailerons and spoilers; — pitch control: elevators, stabilators, variable incidence stabilisers and canards; — yaw control, rudder limiters; Control using elevons, ruddervators; High lift devices, slots, slats, flaps, flaperons; Drag inducing devices, spoilers, lift dumpers, speed brakes; Effects of wing fences, saw tooth leading edges; Boundary layer control using, vortex generators, stall wedges or leading edge devices Operation and effect of trim tabs, balance and anti balance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels;		20
	Airframe Structures — General Concepts (a) Airworthiness requirements for structural strength; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision. Aircraft bonding (b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments; Structure assembly techniques: riveting, bolting, bonding; Methods of surface protection, such as chromating, anodising, painting; Surface cleaning; Airframe symmetry: methods of alignment and symmetry checks. Airframe Structures — Aeroplanes Fuselage (ATA 52/53/56) Construction and pressurisation sealing; Wing, tail-plane pylon and undercarriage attachments; Seat installation; Doors and emergency exits: construction and operation; Window and windscreen attachment.		20
	Wings (ATA 57) Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments. Stabilisers (ATA 55) Construction; Control surface attachment. Flight Control Surfaces (ATA 55/57) Construction and attachment; Balancing — mass and aerodynamic.		15

	Nacelles/Pylons (ATA 54) Nacelles/Pylons: — Construction; — Firewalls; — Engine mounts.		
	References 1) Mechanics of Flight, AC Kermode 2) EASA Module- 08 Basic Aerodynamics, aircraft tech book co. 3) Aviation Maint Technician Hand Book-Airframe -15A, FAA 4) Jeppesen- A & P Technician Air Frame Text Book		
Major Mandatory-4 credits			
Subject Code	Semester-VII	Total Hours	Session Hours
Aircraft Avionics snag analysis and rectification			
7.2	Practical	60	60
Major Mandatory-2 credits			
Subject Code	Semester-VII	Total Hours	Session Hours
Propulsion			
7.3	Turbine Engines Constructional arrangement and operation of turbojet, turbofan, turbo shaft and turbo propeller engines; Electronic Engine control and fuel metering systems (FADEC).	30	10
	Engine Indicating Systems Exhaust gas temperature/Interstage turbine temperature systems; Engine speed; Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; Oil pressure and temperature; Fuel pressure, temperature and flow; Manifold pressure; Engine torque; Propeller speed.		10
	Starting and Ignition Systems Operation of engine start systems and components; Ignition systems and components; Maintenance safety requirements		10
	References 1) EASA Module-14 Propulsion tech book co 2) Civil Aircraft Inspection Procedure (CAP 459)-Part II 3) Aviation Maintenance Technician Series (Power Plant), Dale Crane 4) Aviation Maint Technician Hand Book-Power Plant -12A 5) Aviation Maint. Technician Handbook-Power plant, (Vol-II)		
Major Mandatory-2 credits			
Subject Code	Semester- VII	Total Hours	Session Hours
Aircraft Accident and Incident investigation			
7.4	Practical/Project	30	30
Electives-4 credits			
Subject Code	Semester- VII	Total Hours	Session Hours
Piston Engine-I			
	Fundamentals		

7.5	Mechanical, thermal and volumetric efficiencies; Operating principles — 2 stroke, 4 stroke, Otto and Diesel; Piston displacement and compression ratio; Engine configuration and firing order.	60	5
	Engine Performance Power calculation and measurement; Factors affecting engine power; Mixtures/leaning, pre-ignition		10
	Engine Construction Crank case, crank shaft, cam shafts, sumps; Accessory gearbox; Cylinder and piston assemblies; Connecting rods, inlet and exhaust manifolds; Valve mechanisms; Propeller reduction gearboxes.		10
	Engine Fuel Systems Carburetors Types, construction and principles of operation; Icing and heating. Fuel injection systems Types, construction and principles of operation. Electronic engine control Operation of engine control and fuel metering systems including electronic engine control (FADEC); Systems lay-out and components.		10
	Starting and Ignition Systems Starting systems, pre-heat systems; Magneto types, construction and principles of operation; Ignition harnesses, spark plugs; Low and high tension systems. Induction, Exhaust and Cooling Systems Construction and operation of: induction systems including alternate air systems; Exhaust systems, engine cooling systems — air and liquid.		5
	Supercharging/Turbo charging Principles and purpose of supercharging and its effects on engine parameters; Construction and operation of supercharging/turbocharging systems; System terminology; Control systems; System protection.		10
	Lubricants and Fuels Properties and specifications; Fuel additives; Safety precautions.		5
	Lubrication Systems System operation/lay-out and components.		5
	References 1) EASA Module-16 Piston engine tech book co 2) Civil Aircraft Inspection Procedure (CAP 459)-Part II 3) Aviation Maintenance Technician Series (Power Plant), Dale Crane 4) Aviation Maint Technician Hand Book-Power Plant -12A 5) Aviation Maint. Technician Handbook-Power plant, (Vol-II)		
Minor-4 credits			

Major Mandatory-4 credits			
Subject Code	Semester-VIII	Total Hours	Session Hours
Turbine Aero plane aerodynamics and structures			
8.1	Theory of Flight Large Aircraft	60	5
	Aeroplane Aerodynamics and Flight Controls Operation and effect of: — roll control: ailerons and spoilers; — pitch control: elevators, stabilators, variable incidence stabilisers and canards; — yaw control, rudder limiters; Control using elevons, ruddervators; High lift devices, slots, slats, flaps, flaperons; Drag inducing devices, spoilers, lift dumpers, speed brakes; Effects of wing fences, saw tooth leading edges; Boundary layer control using, vortex generators, stall wedges or leading edge devices; Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels;		10
	High Speed Flight Speed of sound, subsonic flight, transonic flight, supersonic flight, Mach number, critical Mach number, compressibility buffet, shock wave, aerodynamic heating, area rule; Factors affecting airflow in engine intakes of high speed aircraft; Effects of sweepback on critical Mach number.		5
	Airframe Structures — General Concepts (a) Airworthiness requirements for structural strength; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision. Aircraft bonding (b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments; Structure assembly techniques: riveting, bolting, bonding Methods of surface protection, such as chromating, anodising, painting; Surface cleaning. Airframe symmetry: methods of alignment and symmetry checks.		10
	Airframe Structures — Aeroplanes Fuselage (ATA 52/53/56) Construction and pressurisation sealing; Wing, stabiliser, pylon and undercarriage attachments; Seat installation and cargo loading system; Doors and emergency exits: construction, mechanisms, operation and safety devices; Windows and windscreen construction and mechanisms.		10
	Wings Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments		5
	Stabilisers (ATA 55)		

	Construction; Control surface attachment. Flight Control Surfaces (ATA 55/57) Construction and attachment; Balancing — mass and aerodynamic. Nacelles/Pylons (ATA 54) Construction; Firewalls; Engine mount		15
	References 1) Mechanics of Flight, AC Kermode 2) EASA Module- 11 tech book co. 3) Aviation Maint Technician Hand Book-Airframe -15A, FAA 4) Jeppesen- A & P Technician Air Frame Text Book		
Major Mandatory-4 credits			
Subject Code	Semester-VIII	Total Hours	Session Hours
Aircraft structure, engine snag analysis and rectification			
8.2	Practical	60	60
Major Mandatory-2 credits			
Subject Code	Semester-VIII	Total Hours	Session Hours
Design standard and Type certification			
8.3	Requirements for validation of Type Certificate of aeronautical products (Aircraft, engine and propeller) Requirements for recognition/ acceptance of Type Certificate and Supplemental Type Certificate issued by a Contracting State for aeronautical product, viz. aircraft, aircraft engine and propeller. Requirements for design, build/manufacture, registration, operation and maintenance of amateur built aircraft.	30	15
	Certification Procedures for Aircraft and related products		05
	Certification of Aircraft - Engine Emission Aircraft Noise Certification - Standards and Procedures Aeroplane Carbon Dioxide Emissions Certification, Standards And Procedures		10
	References 1) Civil Aviation requirements section 6		
Major Mandatory-2 credits			

Subject Code	Semester - VII	Total Hours	Session Hours
Propellers			
8.4	Fundamentals Blade element theory; High/low blade angle, reverse angle, angle of attack, rotational speed; Propeller slip; Aerodynamic, centrifugal, and thrust forces; Torque; Relative airflow on blade angle of attack; Vibration and resonance	60	10
	Propeller Construction Construction methods and materials used in wooden, composite and metal propellers; Blade station, blade face, blade shank, blade back and hub assembly; Fixed pitch, controllable pitch, constant speeding propeller; Propeller/spinner installation.		10
	Propeller Pitch Control Speed control and pitch change methods, mechanical and electrical/electronic; Feathering and reverse pitch; Over speed protection		10
	Propeller Synchronising Synchronising and synchrophasing equipment.		10
	Propeller Ice Protection Fluid , Electrical de-icing equipment.		5
	Propeller Maintenance Static and dynamic balancing; Blade tracking; Assessment of: blade damage, blade erosion, blade corrosion, impact damage, blade delamination; Propeller treatment/repair schemes; Propeller engine running.		10
	Propeller Storage and Preservation Propeller preservation and depreservation		5
	References 1) Aircraft tech book co. EASA Module-17Propellers 2) Aviation Maint Technician Hand Book-Power Plant -12A, FAA 3) Aviation Maintenance Technician Hand book, FAA 4) A & P Technician Air Frame Text Book, Jeppesen		

Electives-4 credits			
Subject Code	Semester- VIII	Total Hours	Session Hours
Piston Engine II			
8.5	PISTON ENGINE - II Engine Indication Systems Engine speed; Cylinder head temperature; Coolant temperature; Oil pressure and temperature; Exhaust Gas Temperature; Fuel pressure and flow; Manifold pressure.	60	20
	Power plant Installation Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.		20
	Engine Monitoring and Ground Operation Procedures for starting and ground run-up; Interpretation of engine power output and parameters; Inspection of engine and components: criteria, tolerances, and data specified by engine manufacturer.		15
	Engine Storage and Preservation Preservation and depreservation for the engine and accessories/ systems.		5
	References 1) EASA Module-16 Piston engine tech book co 2) Civil Aircraft Inspection Procedure (CAP 459)-Part II 3) Aviation Maintenance Technician Series (Power Plant), Dale Crane 4) Aviation Maint Technician Hand Book-Power Plant -12A 5) Aviation Maint. Technician Handbook-Power plant, (Vol-II)		
On Job Training-4 credits			
Subject Code	Semester - VII	Total Hours	Session Hours
On Job Training			
8.6	On job training	120	120

PASSING PERFORMANCE GRADING :
The Performance Grading of the learner shall be on ten point scale be adopted uniformly.

Letter Grades and Grade Point

Semester GPA/ Program CGPA Semester / Program	% of Marks	Alpha-Sign/Letter Grade Result	Grading Point
9.00 – 10.00	90.0 - 100	O (Outstanding)	10
8.00 - < 9.00	80.0 < 90.0	A+ (Excellent)	9
7.00 - < 8.00	70.0 < 80.0	A (Very Good)	8
6.00 - < 7.00	60.0 < 70.0	B+ (Good)	7
5.50 - < 6.00	55.0 < 60.0	B (Average)	6
5.00 - < 5.50	50.0 < 55.0	C (Pass)	5
Below 5.00	Below 50	F (Fail)	0
AB (Absent)		Absent	

NOTE : VC : Vocational Courses, SEC : Skill Enhancement Courses, AEC : Ability Enhancement Courses, VEC : Value Education Courses, VSC : Vocational Skill Course, IKS : Indian Knowledge System, OJT: On The Job Training, FP: Field Projects.

The performance grading shall be based on the aggregate performance of Internal Assessment and Semester End Examination.

The Semester Grade Point Average (SGPA) will be calculated in the following manner: SGPA = ∑CG / ∑C for a semester, where C is Credit Point and G is Grade Point for the Course/ Subject.

The Cumulative Grade Point Average (CGPA) will be calculated in the following manner: CGPA = ∑CG / ∑C for all semesters taken together.

R. PASSING STANDARD FOR ALL COURSES:

Passing 50% in each subject /Course separate Progressive Evaluation (PE)/Internal Evaluation and Semester-End/Final Evaluation (FE) examination.

R. _____

A. Carry forward of marks in case of learner who fails in the Internal Assessments and/ or Semester-end examination in one or more subjects (whichever component the learner has failed although passing is on total marks).
B. A learner who PASSES in the Internal Examination but FAILS in the Semester-end Examination of the Course shall reappear for the Semester-End Examination of that

Course. However, his/her marks of internal examinations shall be carried over and he/she shall be entitled for grade obtained by him/her on passing.

C. A learner who PASSES in the Semester-end Examination but FAILS in the Internal Assessment of the course shall reappear for the Internal Examination of that Course. However, his/her marks of Semester-End Examination shall be carried over and he/she shall be entitled for grade obtained by him/her on passing

R ALLOWED TO KEEP TERMS (ATKT)

A. A learner shall be allowed to keep term for Semester II irrespective of number of heads/courses of failure in the Semester I.

B. A learner shall be allowed to keep term for Semester III wherever applicable if he/she passes each of Semester I and Semester II.

OR

C. A learner shall be allowed to keep term for Semester III wherever applicable irrespective of number of heads/courses of failure in the Semester I & Semester II.

D. A learner shall be allowed to keep term for Semester IV wherever applicable if he/she passes each of Semester I, Semester II and Semester III.

OR

E. A learner shall be allowed to keep term for Semester IV wherever applicable irrespective of number of heads/courses of failure in the Semester I, Semester II, and Semester III

F. A learner shall be allowed to keep term for Semester V wherever applicable if he/she passes each of Semester I, Semester II, Semester III and Semester IV.

OR

G. A learner shall be allowed to keep term for Semester V wherever applicable irrespective of number of heads/courses of failure in the Semester I, Semester II, Semester III, and Semester IV.

H. The result of Semester VI wherever applicable OR final semester shall be kept in abeyance until the learner passes each of Semester I, Semester II, Semester III, Semester IV, Semester V wherever applicable.

OR

I. A learner shall be allowed to keep term for Semester VI wherever applicable irrespective of number of heads/courses of failure in the Semester I, Semester II, Semester III, Semester IV and Semester V.

University of Mumbai's

Garware Institute of Career Education and Development Board of Studies-Committee members

UG- B.Sc. Aeronautics

Date: 11th July 2023 at 2.00 to 3.00 PM

Sr. No.	Name	Signature
1.	Dr. Keyur Kumar Nayak Director, GICED	
2.	Shashikant Prajapati Course Coordinator	
3.	Shashikant	
4.	Deepak Pawshe	
5	Swapnali kambli	
6	Furkan Alam	
7	Chaitali Borude	
8	Priyesh N	
9	Rakesh Kumar	
10	Manoj Ram Misal	

Dr. Keyurkumar M. Nayak,
Director,
UM-GICED

Prof. (Dr.) Shivram S. Garje
Dean, Faculty of Science

Appendix B

Justification for B.Sc. (Aeronautics)

1.	**Necessity for starting the course**	The University of Mumbai's Garware Institute of Career Education & Development plans to introduce a four years' full time B.Sc. Aeronautics. The course will expose the participants to Air law, Civil Aviation rules, Maintenance and Planning requirements, Documentation procedures, Quality systems and their practical application in an DGCA (Govt. of India) approved aircraft operating environment.
2.	**Whether the UGC has recommended the course:**	Yes, UGC has recommended the course as per gazette no. DL(N)-04/0007/2003-05 dated 11th July 2014. UGC encourages the incorporation of skill oriented and value-added courses to develop skilled manpower.
3.	**Whether all the courses have commenced from the academic year 2023-2024**	Yes, it would be commencing from the Academic year 2023-24 as per NEP 2020.
4.	**The courses started by the University are self-financed, whether adequate number of eligible permanent faculties are available?**	Yes, this course is self-financed. The expert visiting faculty from industries come to teach this course.
5.	**To give details regarding the duration of the Course and is it possible to compress the course?**	The duration of the course is four years (Eight Semesters). It cannot be further compressed.
6.	**The intake capacity of each course and no. of admissions given in the current academic year:**	The intake capacity of this course is 60 students. The admission procedure is still ongoing.
7.	**Opportunities of Employability/ Employment available after undertaking these cours**es:	A promising filed where there are ample job opportunities for qualified engineers which are also in demand. Students have job opportunities in Airlines, Aircraft Maintenance organisations and allied aviation activities.

Dr. Keyurkumar M. Nayak,
Director,
UM-GICED

Prof. (Dr.) Shivram S. Garje
Dean, Faculty of Science