



**ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA**

**AN AUTONOMOUS INSTITUTE**

**(Affiliated to Shivaji University, Kolhapur)**

**SECOND REVISION CURRICULUM**

**BACHELOR OF TECHNOLOGY IN**

**AERONAUTICAL ENGINEERING**

**DOCUMENT NUMBER: ADCET/ACAD/5, Rev:00, 01/01/2020**



Annasaheb Dange College of Engineering and Technology Ashta  
Department of Aeronautical Engineering



**B. Tech Program in Aeronautical Engineering with Minors ( 170 Credits)**

Sl.No		I	II	III	IV	V	VI	VII	VIII	Total
1	Basic Science (BS)	8	8							16
2	Engineering Science (ES)	6	6							12
3	Program Core (PC)	6	2	17	12	10	6	7		60
4	Program Elective (PE)				2	2	4	5	3	16
5	Vocational and Skill Enhancement Courses (VS)			2	2	2	1	1		8
6	Experiential Learning Courses (EL)				1	1	2	4	10	18
7	Multidisciplinary Minor (MM)				2	3	3	3	3	14
8	Humanities and Social Science (HS)	1	3	3	2	1	2	2		14
9	Open Elective (OE)					3	3	2		8
10	Co-curricular Courses (CC)			1	1	1	1			4
		21	19	23	22	23	22	24	16	170
		40		45		45		40		170
		First Year		Second Year		Third Year		Final Year		

  
Head of Department

  
Dean Academics

  
Director

  
Executive Director





**Annasaheb Dange College of Engineering and Technology Ashta**  
**Department of Aeronautical Engineering**  
**B. Tech Program in Aeronautical Engineering with Minors ( 170 Credits)**



**Contact Hour Distribution**

Sl.No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	L	T	P	Tot	C
I	Lecture															Tutorial	Practical														15	1	10	26	21
II	Lecture												Tutorial		Practical																12	1	12	25	19
III	Lecture										Tutorial			Practical																	12	4	14	30	23
IV	Lecture												Tutorial			Practical															11	4	14	29	22
V	Lecture												Tutorial			Practical															12	3	14	29	23
VI	Lecture										Tutorial		Practical																		14	2	12	28	22
VII	Lecture								Tutorial		Practical																			8	2	18	28	24	
VIII	Lecture			Practical																						3	-	20	23	16					
	Lecture											Tutorial		Practical																	11	2	14	27	

 Lecture Hours / Week  
 Tutorial Hours / Week  
 Practical Hours / Week

  
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**Annasaheb Dange College of Engineering and Technology Ashta**  
**Department of Aeronautical Engineering**



**Teaching and Evaluation Scheme**

**F. Y. B. Tech Semester I**

Course Code	Course Name	Teaching Scheme				THEORY							PRACTICAL					GRAND TOTAL		
						ISE		MSE+ ESE			Total	Min	ISE		ESE		Total		Min	
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min				
2AEBS101	Applied Mathematics - I	3	1	-	4	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2AEBS102	Applied Physics	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2AEES103	Engineering Mechanics	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2AEPC104	Basic Mechanical Engineering	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2AEPC105	Engineering Graphics	2	-	2	3	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2AEES106	Workshop Practices	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2AEBS107	Applied Physics Labaoratory	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2AEES108	Design Thinking Laboratory	1	-	2	2	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2AEHS109	Value Added Course 1	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
		<b>15</b>	<b>1</b>	<b>10</b>	<b>21</b>															<b>650</b>
	<b>Total Contact Hours/Week</b>	<b>26</b>																		

  
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**Teaching and Evaluation Scheme**

**F. Y. B. Tech Semester II**

Course Code	Course Name	Teaching Scheme				THEORY							PRACTICAL				GRAND TOTAL		
						ISE		MSE+ ESE			Total	Min	ISE		ESE			Total	Min
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min			
2AEBS110	Applied Mathematics - II	3	1	-	4	40	16	30	30	24	100	40	-	-	-	-	-	-	100
2AEBS111	Applied Chemistry	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100
2AEES112	Basic Electrical and Electronics Engineering	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100
2AEPC113	Material Science and Engineering	2	-	-	2	40	16	30	30	24	100	40	-	-	-	-	-	-	100
2AEHS114	Professional Communication Skills	-	-	4	2	-	-	-	-	-	-	-	50	20	-	-	50	20	50
2AEBS115	Applied Chemistry Laboratory	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50
2AEES116	Programing for Problem Solving using C/C++	1	-	2	2	-	-	-	-	-	-	-	25	10	25	10	50	20	50
2AEES117	Basic Electrical and Electronics Engineering Laboratory	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50
2AEHS118	Value Added Course 2	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50
		<b>12</b>	<b>1</b>	<b>12</b>	<b>19</b>														
	<b>Total Contact Hours/Week</b>	<b>25</b>																	<b>650</b>

  
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**Teaching and Evaluation Scheme**

**S. Y. B. Tech Semester III**

Course Code	Course Name	Teaching Scheme				THEORY							PRACTICAL					GRAND TOTAL		
		L	T	P	Credits	ISE		MSE + ESE			Total	Min	ISE		MSE + ESE		Total		Min	
						Max	Min	MSE	ESE	Min			Max	Min	Max	Min				
2AEPC201	Mathematical Modeling and Problem Solving	2	1	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2AEPC202	Solid Mechanics	2	1	2	4	40	16	30	30	24	100	40	50	20	-	-	50	20	150	
2AEPC203	Fluid Mechanics	2	1	2	4	40	16	30	30	24	100	40	50	20	-	-	50	20	150	
2AEPC204	Applied Thermodynamics	2	1	2	4	40	16	30	30	24	100	40	50	20	-	-	50	20	150	
2AEPC205	Introduction to Aeronautical Engineering	1	-	2	2	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2AEVS206	Parametric Modeling & Assembly	-	-	2	1	-	-	-	-	-	-	-	25	10	25	10	50	20	50	
2AEVS207	Python Programing for Engineers	-	-	2	1	-	-	-	-	-	-	-	25	10	25	10	50	20	50	
2AEHS208	Environmental Studies	2	-	-	2	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2AEHS209	Constitution of India	1	-	-	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2AECC210	Aptitude and Reasoning Part - I	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
		12	4	14	23															850
<b>Total Contact Hours/Week</b>		<b>30</b>																		

  
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**Teaching and Evaluation Scheme**

**S. Y. B. Tech Semester IV**

Course Code	Course Name	Teaching Scheme				THEORY							PRACTICAL					GRAND TOTAL		
		L	T	P	Credits	ISE		MSE+ ESE			Total	Min	ISE		MSE + ESE		Total		Min	
						Max	Min	MSE	ESE	Min			Max	Min	Max	Min				
2AEPC211	Low Speed Aerodynamics	2	1	2	4	40	16	30	30	24	100	40	50	20	-	-	50	20	150	
2AEPC212	Aircraft Structures	2	1	2	4	40	16	30	30	24	100	40	50	20	-	-	50	20	150	
2AEPC213	Airbreathing Propulsion	2	1	2	4	40	16	30	30	24	100	40	50	20	-	-	50	20	150	
2AEPE2**	Professional Elective - I	2	-	-	2	50	20	-	-	-	50	20	-	-	-	-	-	-	50	
2AEVS218	Grid Generation using HyperMesh	-	-	2	1	-	-	-	-	-	-	-	25	10	25	10	50	20	50	
2AEVS219	Professional and Business Communication	-	-	2	1	-	-	-	-	-	-	-	25	10	25	10	50	20	50	
2AEEL220	Innovation/Prototype	-	-	2	1	-	-	-	-	-	-	-	25	10	25	10	50	20	50	
2AEHS221	Psychology	1	1	-	2	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2AECC223	Aptitude and Reasoning Part - II	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2*****	Minor Stream Course I	2	-	-	2	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
		<b>11</b>	<b>4</b>	<b>14</b>	<b>22</b>															<b>850</b>
<b>Total Contact Hours/Week</b>		<b>29</b>																		

Professional Elective - I	
2AEPE214	Introduction to Finite Element Analysis
2AEPE215	Introduction to Computational Fluid Dynamics
2AEPE216	Introduction to Unmanned Aerial Vehicles
2AEPE217	Introduction to Aircraft Maintenance

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**Teaching and Evaluation Scheme**

**T. Y. B. Tech Semester V**

Course Code	Course Name	Teaching Scheme				THEORY								PRACTICAL						GRAND TOTAL
		L	T	P	Credits	ISE		MSE+ ESE			Total	Min	ISE		MSE + ESE		Total	Min		
						Max	Min	MSE	ESE	Min			Max	Min	Max	Min				
2AEPC301	Aircraft Performance	2	1	2	4	40	16	30	30	24	100	40	50	20	-	-	50	20	150	
2AEPC302	Aircraft Stability and Control	2	1	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2AEPC303	High Speed Aerodynamics	2	1	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2AEPE3**	Professional Elective - II	-	-	4	2	-	-	-	-	-	-	-	50	20	50	20	100	40	100	
2AEVS308	Geometric Dimensions and Tolerances (GD&T)	-	-	2	1	-	-	-	-	-	-	-	25	10	25	10	50	20	50	
2AEVS309	Non Destructive Testing (NDT)	-	-	2	1	-	-	-	-	-	-	-	25	10	25	10	50	20	50	
2AEEL310	Industrial Training	-	-	-	1								50	20	-	-	50	20	50	
2AEHS311	Entrepreneurship	-	-	2	1								50	20	-	-	50	20	50	
2AECC312	Aptitude and Reasoning Part - II	-	-	2	1								50	20	-	-	50	20	50	
2*****	Minor Stream Course II	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2*****	Open Elective Course I	3	-	-	3	100	40	-	-	-	-	-	-	-	-	-	-	-	100	
		<b>12</b>	<b>3</b>	<b>14</b>	<b>23</b>															<b>900</b>
	<b>Total Contact Hours/Week</b>	<b>29</b>																		

Professional Elective - II	
2AEPE304	Analyzing Aircraft Structures Using FEA
2AEPE305	Internal and External Flow Analysis Using CFD
2AEPE306	Autonomous Navigation and Flight Control
2AEPE307	Airframe and Aero Engine Maintenance

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**Annasaheb Dange College of Engineering and Technology Ashta**  
**Department of Aeronautical Engineering**



**Teaching and Evaluation Scheme**

**T. Y. B. Tech Semester VI**

Course Code	Course Name	Teaching Scheme				THEORY						PRACTICAL					GRAND TOTAL			
		L	T	P	Credits	ISE		MSE+ ESE			Total	Min	ISE		MSE + ESE			Total	Min	
						Max	Min	MSE	ESE	Min			Max	Min	Max	Min				
2AEPC313	Composite Materials and Structures	2	-	2	3	40	16	30	30	24	100	40	50	20	-	-	50	20	150	
2AEPC314	Rocket Propulsion	2	1	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2AEPE3**	Professional Elective - III	2	-	-	2	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2AEPE3**	Professional Elective - IV	-	-	4	2	-	-	-	-	-	-	-	50	20	50	20	100	40	100	
2AEEL323	Aircraft Design Project	-	1	2	2	-	-	-	-	-	-	-	50	20	50	20	100	40	100	
2AEVS324	Virtual Instrumentation using Labview	-	-	2	1	-	-	-	-	-	-	-	25	10	25	10	50	20	50	
2AECC325	Aptitude and Reasoning Part - IV	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50	
2AEHS326	Universal Human Values	2	-	-	2	50	20	-	-	-	50	20	-	-	-	-	-	-	50	
2*****	Minor Stream Course 3	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2*****	Open Elective 2	3	-	-	3	100	40	-	-	-	100	40	-	-	-	-	-	-	100	
		14	2	12	22															900
<b>Total Contact Hours/Week</b>		28																		

Professional Elective - III	
2AEPE315	Helicopter Engineering
2AEPE316	Lighter-Than-Air Systems
2AEPE317	Wind Energy Engineering
2AEPE318	Space Dynamics

Professional Elective - IV	
2AEPE319	Explicit Dynamic Analysis
2AEPE320	Multiphase Flow Analysis
2AEPE321	Flight Controller for Drones
2AEPE322	AR and VR in Aircraft Maintenance

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**Head of Department**

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**Dean Academics**

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**Director**

*[Signature]*  
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# Annasaheb Dange College of Engineering and Technology Ashta

## Department of Aeronautical Engineering

### Teaching and Evaluation Scheme



#### Final Year. B. Tech Semester VII

Course Code	Course Name	Teaching Scheme				THEORY								PRACTICAL				GRAND TOTAL		
						ISE		MSE+ ESE			Total	Min	ISE		MSE + ESE		Total		Min	
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min				
2AEPC401	Vibrations and Structural Dynamics	2	1	2	4	40	16	30	30	24	100	40	50	20	-	-	50	20	150	
2AEPC402	Heat Transfer	2	1	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2AEPE4**	Professional Elective - V	2	-	2	3	40	16	30	30	24	100	40	50	20	-	-	50	20	150	
2AEPE4**	Professional Elective - VI	-	-	4	2	-	-	-	-	-	-	-	50	20	50	20	100	40	100	
2AESC411	Aircraft Technical Publication	-	-	2	1	-	-	-	-	-	-	-	25	10	25	10	50	20	50	
2AEEL412	Capstone Project	-	-	8	4	-	-	-	-	-	-	-	50	20	50	20	100	40	100	
2CCHS413	Project Management and Finance	2	-	-	2	50	20	-	-	-	50	20	-	-	-	-	-	-	50	
2*****	Minor Stream Course 4	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2*****	Open Elective 3	2	-	-	2	100	40	-	-	-	100	40	-	-	-	-	-	-	100	
		<b>13</b>	<b>2</b>	<b>18</b>	<b>24</b>															<b>900</b>
<b>Total Contact Hours/Week</b>		<b>33</b>																		

Professional Elective - V	
2AEPE403	Experimental Stress Analysis
2AEPE404	Turbulence Modeling
2AEPE405	Mechatronics for UAV
2AEPE406	Air Traffic Control and Flight Scheduling

Professional Elective - VI	
2AEPE407	Composite Finite Element Analysis
2AEPE408	CFD Analysis using OpenFOAM
2AEPE409	Design of Unmanned Aerial Vehicles
2AEPE410	Repair and Maintenance of Composite Aircraft Structures

  
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Annasaheb Dange College of Engineering and Technology Ashta  
Department of Aeronautical Engineering




Teaching and Evaluation Scheme

Final Year. B. Tech Semester VIII

Course Code	Course Name	Teaching Scheme				THEORY								PRACTICAL						GRAND TOTAL
						ISE		MSE+ ESE			Total	Min	ISE		MSE + ESE		Total	Min		
		Max	Min	MSE	ESE	Min	Max	Min	Max	Min										
2AEPE4**	Professional Elective - VII	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100	
2AEPR418	Internship /On Job Training	-	-	20	10	-	-	-	-	-	-	-	100	40	100	40	200	80	200	
2*****	Minor Stream Project	-	-	-	3	-	-	-	-	-	-	-	50	20	50	20	100	40	100	
		3	0	20	16															400
	Total Contact Hours/Week	23																		

Professional Elective - VII	
2AEPE414	Aerodynamic Design of Axial Flow Compressors & Fans
2AEPE415	Advanced Control System Design for Aerospace Vehicles
2AEPE416	Engineering Design Optimization
2AEPE417	Launch Vehicle Analysis and Design

  
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Annasaheb Dange College of Engineering and Technology Ashta  
Department of Aeronautical Engineering  
Details of Minor Program in Aeronautical Engineering



Minor Program in Unmanned Aerial Vehicles (UAVs)					
Course Code	Course Name	L	T	P	Credits
2AEUV201	Introduction to Unmanned Aerial Vehicles (UAVs)	2	-	-	2
2AEUV301	UAV Electronics and Sensors	3	-	-	3
2AEUV302	Flight Control Systems	3	-	-	3
2AEUV401	UAV Safety and Regulations	3	-	-	3
2AEUV402	Capstone Project on UAVs	-	-	-	3
				<b>Total</b>	<b>14</b>

Minor Program in Air Transportation					
Course Code	Course Name	L	T	P	Credits
2AEAT201	Introduction to Air Transportation	2	-	-	2
2AEAT301	Airport Operations and Air Traffic Control	3	-	-	3
2AEAT302	Air Transportation Management and Route Planning	3	-	-	3
2AEAT401	Aviation Safety and Logistics	3	-	-	3
2AEAT402	Capstone Project on Air Transportation	-	-	-	3
				<b>Total</b>	<b>14</b>

Minor Program in Avionics					
Course Code	Course Name	L	T	P	Credits
2AEAV201	Introduction to Flight and Avionics	2	-	-	2
2AEAV301	Aircraft Systems and Instruments	3	-	-	3
2AEAV302	Aircraft Instrumentation and Control	3	-	-	3
2AEAV401	Avionics Design and Maintenance	3	-	-	3
2AEAV402	Capstone Project on Avionics	-	-	-	3
				<b>Total</b>	<b>14</b>

  
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Annasaheb Dange College of Engineering and Technology Ashta  
Department of Aeronautical Engineering  
Details of Honours Program in Aeronautical Engineering



Honours Program in Aerodynamics					
Course Code	Course Name	L	T	P	Credits
2AEAD201	Wind Tunnel Testing	3	-	-	3
2AEAD301	Industrial Aerodynamics	3	-	-	3
2AEAD302	Low Reynolds Number Aerodynamics	4	-	-	4
2AEAD401	Rotary Wing Aerodynamics	4	-	-	4
2AEAD402	Hypersonic Aerodynamics	4	-	-	4
				<b>Total</b>	<b>18</b>

Honours Program in Propulsion					
Course Code	Course Name	L	T	P	Credits
2AEPR201	Introduction to Advanced Propulsion Systems	3	-	-	3
2AEPR301	Electric and Hybrid Propulsion	3	-	-	3
2AEPR302	Energy and Fuel Cells	4	-	-	4
2AEPR401	Spacecraft Propulsion	4	-	-	4
2AEPR402	Propulsion Systems for Sustainable Aircraft	4	-	-	4
				<b>Total</b>	<b>18</b>


Honours Program in Aircraft Structures					
Course Code	Course Name	L	T	P	Credits
2AEAS201	High Temperature Material Characterization	3	-	-	3
2AEAS301	Theory of Elasticity	3	-	-	3
2AEAS302	Fatigue and Fracture Mechanics	4	-	-	4
2AEAS401	Functionally Graded Materials	4	-	-	4
2AEAS402	Design of Aircraft Structures	4	-	-	4
				<b>Total</b>	<b>18</b>

Honours Program in Control and Dynamics					
Course Code	Course Name	L	T	P	Credits
2AECD201	Introduction to Linear Control Theory	3	-	-	3
2AECD301	Helicopter Dynamics	3	-	-	3
2AECD302	Non Linear Flight Dynamics	4	-	-	4
2AECD401	Tracking and Control of Launch Vehicle	4	-	-	4
2AECD402	Navigation, Guidance and Trajectory Optimization	4	-	-	4
				<b>Total</b>	<b>18</b>

  
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**Annasaheb Dange College of Engineering and Technology Ashta**  
**Department of Aeronautical Engineering**  
**Details of Honours with Research in Aeronautical Engineering**



Honours with Research Program					
Course Code	Course Name	L	T	P	Credits
2AERP401	Research Methodology	4	-	-	4
2AERP402	Dissertation Phase I	-	-	-	6
2AERP403	Dissertation Phase II	-	-	-	8
				<b>Total</b>	<b>18</b>

  
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