

# **AEROSPACE ENGINEERING**

**Table AE-1**  
**B.Tech. Aerospace Engineering - 2018-22**  
**COURSE COMPONENTS AND CURRICULUM**

S.No	Category	Credits
1	Basic Science Courses	27
2	Engineering Science courses	23.5
3	Humanities & Social Sciences Including Management Courses	10
4	Professional Core Courses	58.5
5	Professional Elective Courses	17
6	Open Elective Courses	9
7	Internship/ Industrial Training & Project Work	15
Total Credits		160

Basic Science Courses (BSC)						
Sl. No	Code No.	Name of the Course	L	T	P	Credits
1	18PH1001	Engineering Physics - Electromagnetism, Optics and Properties of Matter	3	1	0	4
2	18PH1002	Engineering Physics - Electromagnetism, Optics and Properties of Matter Lab	0	0	3	1.5
3	18CH1003	Engineering Chemistry	3	1	0	4
4	18CH1002	Applied Chemistry Laboratory	0	0	3	1.5
5	18MA1001	Calculus and Linear Algebra	3	1	0	4
6	18MA1008	Ordinary Differential Equations and Complex Variables	3	1	0	4
7	18MA2005	Partial Differential Equations, Probability and Statistics	3	1	0	4
8	18MA2014	Numerical Mathematics and Computing	3	1	0	4
Total Credits						27

Engineering Science courses (ESC)						
Sl.No	Code No.	Name of the Course	L	T	P	Credits
1	18ME1001	Engineering Drawing	0	0	4	2
2	18ME1002	Engineering Graphics Laboratory (AutoCAD)	0	0	2	1
3	18EE1003	Basic Electrical & Electronics Engineering	3	1	0	4
4	18EE1004	Basic Electrical & Electronics Engineering Laboratory	0	0	2	1
5	18CS1001	Programming for Problem Solving	3	0	0	3
6	18CS1002	Programming for Problem Solving Lab	0	0	3	1.5
7	18ME1004	Workshop/ Manufacturing Practices Laboratory	0	0	2	1
8	18ME1003	Engineering Mechanics	3	1	0	4
9	18AE2001	Introduction to Aerospace Engineering	3	0	0	3
10	18AE2002	Aerospace Materials and Processes	3	0	0	3
Total Credits						23.5

<b>Humanities &amp; Social Sciences Including Management Courses(HSMC)</b>						
Sl.No	Code No.	Subject	L	T	P	Credits
1	18EN1001	English	2	0	0	2
2	18EN1002	English Language Lab	0	0	2	1
3	18MS2012	Engineering Economics	3	0	0	3
5	18ME2074	Operations Research	3	0	0	3
6	18ME2075	Technical Aptitude	1	0	0	1
7		Constitution of India	0	0	0	0
8	18CH2001	Environmental Sciences	0	0	0	0
Total Credits						10

<b>Professional Core Courses(PCC)</b>						
Sl.No	Code No.	Name of the Course	L	T	P	Credits
1	18AE2003	Basics of Fluid Mechanics	3	0	0	3
2	18AE2004	Fluid Mechanics Laboratory	0	0	2	1
3	18AE2005	Strength of Materials	3	0	0	3
4	18AE2006	Strength of Materials Laboratory	0	0	2	1
5	18AE2007	Thermodynamics	3	0	0	3
6	18AE2008	Thermodynamics Laboratory	0	0	2	1
7	18AE2009	Aerodynamics	3	0	0	3
8	18AE2010	Aerospace Structures-I	3	0	0	3
9	18AE2011	Propulsion-I	3	0	0	3
10	18AE2012	Propulsion Laboratory	0	0	3	1.5
11	18AE2013	Airplane performance	3	0	0	3
12	18AE2014	Gas dynamics	3	0	0	3
13	18AE2015	Aerodynamics Laboratory	0	0	3	1.5
14	18AE2016	Aerospace Structures-II	3	0	0	3
15	18AE2017	Aerospace Structures Laboratory	0	0	3	1.5
16	18AE2018	Propulsion-II	3	0	0	3
17	18AE2019	Aircraft Stability and Control	3	0	0	3
18	18AE2020	Flight Stability and Aeromodelling Laboratory	0	0	2	1
19	18AE2021	CAD/CAM Laboratory	0	0	3	1.5
20	18AE2022	Aircraft Instrumentation & Avionics	3	0	0	3
21	18AE2023	Navigation, Guidance and Control of Aerospace Vehicles	3	0	0	3
22	18AE2024	Aircraft Instrumentation & Control Laboratory	0	0	3	1.5
23	18AE2025	Space Dynamics	3	0	0	3
24	18AE2026	Aircraft Design Project	0	0	4	2
25	18AE2027	Heat and Mass Transfer	3	0	0	3
Total Credits						58.5

<b>Professional Elective Courses(PEC)</b>						
Sl.No	Code No.	Name of the Course	L	T	P	Credits
1	18AE2028	Computational Fluid Dynamics	3	0	0	3
2	18AE2029	Computational Fluid Dynamics Laboratory	0	0	2	1
3	18AE2030	Boundary layers	3	0	0	3
4	18AE2031	Applied Aerodynamics	3	0	0	3
5	18AE2032	Applied Aerodynamics Laboratory	0	0	2	1

6	18AE2033	Introduction to Hypersonic Flows	3	0	0	3
7	18AE2034	Wind tunnel Techniques	3	0	0	3
8		Helicopter Aerodynamics	3	0	0	3
9	18AE2036	Aeroacoustics	3	0	0	3
10	18AE2037	Aerothermodynamics	3	0	0	3
11	18AE2038	Finite Element Analysis	3	0	0	3
12	18AE2039	Finite Element Analysis Laboratory	0	0	2	1
13	18AE2040	Manufacturing Technology	3	0	0	3
14	18AE2041	Manufacturing Laboratory	0	0	2	1
15	18AE2042	Theory of elasticity	3	0	0	3
16	18AE2043	Experimental Stress Analysis	3	0	0	3
17	18AE2044	Design and Analysis of Composite Structures	3	0	0	3
18	18AE2045	Introduction to Non Destructive Testing	3	0	0	3
19	18AE2046	Fatigue and Fracture Mechanics	3	0	0	3
20	18AE2047	Structural Dynamics and Aeroelasticity	3	0	0	3
21	18AE2048	Cryogenic Propulsion	3	0	0	3
22	18AE2049	Fundamental of Combustion	3	0	0	3
23	18AE2050	Combustion Laboratory	0	0	2	1
24	18AE2051	Solar Thermal Energy	3	0	0	3
25	18AE2052	Rocket and Missiles	3	0	0	3
26	18AE2053	Advanced Heat Transfer	3	0	0	3
27	18AE2054	Aero Engine Maintenance and Repair	3	0	0	3
28	18AE2055	Advanced Space Dynamics	3	0	0	3
29	18AE2056	Space Mission Design and Optimization	3	0	0	3
30	18AE2057	Air Traffic Control and Aerodrome Details	3	0	0	3
31	18AE2058	Unmanned Aircraft Systems	3	0	0	3
32	18AE2059	Optimization Techniques in Engineering	3	0	0	3
33	18AE2060	Aircraft Systems	3	0	0	3
Total Credits						<b>17</b>

<b>Open Elective Courses(OEC)*</b>						
Sl.No	Code No.	Name of the Course	L	T	P	Credits
1	18AE2061	Basics of Aerospace Engineering	3	0	0	3
2	18AE2062	Road Vehicle Aerodynamics	3	0	0	3
3	18AE2063	Wind Turbine Design	3	0	0	3
4	18AE2064	Building Aerodynamics	3	0	0	3
5	18AE2065	Introduction to Unmanned Aircraft System	3	0	0	3
6	18AE2066	Space Engineering	3	0	0	3
*for other departments students. Aerospace students will be take 9 credits of Open Elective Courses offered by other department.						

<b>Internship/ Industrial Training &amp; Project Work (ISP)</b>						
Sl.No	Code No.	Name of the Course	L	T	P	Credits
1	ITP2901	Internship/ Industrial Training-I	-	-	-	1
2	ITP2902	Internship/ Industrial Training-II	-	-	-	1

3	MP2951	Mini- Project	-	-	-	2
4	18AE2997	Project Work-Literature Survey	-	-	-	3
5	18AE2998/ 2299	Project Work (Part Semester/Full Semester)	-	-	-	5/10
Total Credits						15

### SEMESTER-WISE CURRICULUM

#### SEMESTER-I

Sl.No	Category	Code No.	Name of the Course	L	T	P	TCH	Credits
1	BSC	18MA1001	Calculus and Linear Algebra	3	1	0	4	4
2	BSC	18PH2001	Engineering Physics Engineering Physics - Electromagnetism, Optics and Properties of Matter	3	1	0	4	4
3	BSC	18PH2001	Engineering Physics - Electromagnetism, Optics and Properties of Matter Lab	0	0	3	3	1.5
4	ESC	18CS1001	Programming for Problem Solving	3	0	0	3	3
5	ESC	18CS1002	Programming for Problem Solving Lab	0	0	3	3	1.5
6	HSMC	18EN1001	English	2	0	0	2	2
7	HSMC	18EN1002	English Language Lab	0	0	2	2	1
8	ESC	18ME1004	Workshop/ Manufacturing Practices Laboratory	0	0	2	2	1
<b>Total Contact Hours per Week</b>							<b>25</b>	
<b>Total Credits</b>							<b>18</b>	

#### SEMESTER-II

Sl.No	Category	Code No.	Name of the Course	L	T	P	TCH	Credits
1	BSC	18MA1008	Ordinary Differential Equations, Complex Variables	3	1	0	4	4
2	BSC	18CH1003	Engineering Chemistry	3	1	0	4	4
3	BSC	18CH1002	Applied Chemistry Laboratory	0	0	3	3	1.5
4	ESC	18ME1003	Engineering Mechanics	3	1	0	4	4
5	ESC	18AE2001	Introduction to Aerospace Engineering	3	0	0	3	3
6	ESC	18ME1001	Engineering Drawing	0	0	4	4	2
7	ESC	18ME1002	Engineering Graphics Laboratory(AutoCAD)	0	0	2	2	1
8	ESC	18EE1003	Basic Electrical & Electronics Engineering	3	1	0	4	4
9	ESC	18EE1004	Basic Electrical & Electronics Engineering Laboratory	0	0	2	2	1
<b>Total Contact Hours per Week</b>							<b>28</b>	
<b>Total Credits</b>							<b>24.5</b>	

#### SEMESTER-III

Sl.No	Category	Code No.	Name of the Course	L	T	P	TCH	Credits
1	BSC	18MA2005	Partial Differential Equations, Probability and Statistics	3	1	0	4	4
2	PCC	18AE2003	Basic of Fluid Mechanics	3	0	0	3	3
3	PCC	18AE2004	Fluid Mechanics Laboratory	0	0	2	2	1
4	PCC	18AE2005	Strength of Materials	3	0	0	3	3

5	PCC	18AE2006	Strength of Materials Laboratory	0	0	2	2	1
6	PCC	18AE2007	Thermodynamics	3	0	0	3	3
7	PCC	18AE2008	Thermodynamics Laboratory	0	0	2	2	1
8	HSMC	18MS2012	Engineering Economics	3	0	0	3	3
9	ESC	18AE2002	Aerospace Materials and Processes	3	0	0	3	3
<b>Total Contact Hours per Week</b>								<b>22</b>
<b>Total Credits</b>								<b>22</b>

#### SEMESTER-IV

Sl.No	Category	Code No.	Name of the Course	L	T	P	TCH	Credits
1	BSC	18MA2014	Numerical Methods and Computing	3	1	0	4	4
2	PCC	18AE2009	Aerodynamics	3	0	0	3	3
3	PCC	18AE2010	Aerospace Structures-I	3	0	0	3	3
4	PCC	18AE2011	Propulsion-I	3	0	0	3	3
5	PCC	18AE2012	Propulsion Laboratory	0	0	3	3	1.5
6	PCC	18AE2013	Airplane performance	3	0	0	3	3
7	PCC	18AE2021	CAD/CAM Laboratory	0	0	2	3	1.5
8	PCC	18AE2025	Space Dynamics	3	0	0	3	3
9	MC	18CH2001	Environmental Sciences	0	0	0	0	0
<b>Total Contact Hours per Week</b>								<b>27</b>
<b>Total Credits</b>								<b>22</b>

#### SEMESTER-V

Sl.No	Category	Code No.	Name of the Course	L	T	P	TCH	Credits
1	PCC	18AE2014	Gas dynamics	3	0	0	3	3
2	PCC	18AE2015	Aerodynamics Laboratory	0	0	3	3	1.5
3	PCC	18AE2016	Aerospace Structures-II	3	0	0	3	3
4	PCC	18AE2017	Aerospace Structures Laboratory	0	0	3	3	1.5
5	PCC	18AE2018	Propulsion-II	3	0	0	3	3
7	PCC	18AE2019	Aircraft Stability and Control	3	0	0	3	3
8	PCC	18AE2020	Flight Stability and Aeromodelling Laboratory	0	0	2	2	1
9	PCC	18AE2022	Aircraft Instrumentation & Avionics	3	0	0	3	3
10	OEC		Open Elective Courses-I	3	0	0	3	3
11	ISP	ITP2901	Internship/ Industrial Training-I	15 Days				1
12	MC	MEMC-II	Constitution of India	0	0	0	3	0
<b>Total Contact Hours per Week</b>								<b>29</b>
<b>Total Credits</b>								<b>23</b>

#### SEMESTER-VI

Sl.No	Category	Code No.	Name of the Course	L	T	P	TCH	Credits
1	PCC	18AE2027	Heat and Mass Transfer	3	0	0	3	3
2	PEC		Professional Elective Courses-1	3	0	0	3	3
3	PEC		Professional Elective Courses-2	0	0	2	2	1
4	PEC		Professional Elective Courses-3	3	0	0	3	3
5	PEC		Professional Elective Courses-4	3	0	2	2	1
6	OEC		Professional Elective Courses-5	3	0	0	3	3
7	OEC		Open Elective Courses-II	3	0	0	3	3
8	HSMC	18ME2075	Technical Aptitude	1	0	0	1	1
9	PCC	18AE2026	Aircraft Design Project	0	0	4	4	2
<b>Total Contact Hours per Week</b>								<b>20</b>

<b>Total Credits</b>	<b>20</b>
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### SEMESTER-VII

Sl.No	Category	Code No.	Name of the Course	L	T	P	TCH	Credits
1	HSMC	18ME2074	Operations Research	3	0	0	3	3
2	PCC	18AE2023	Navigation, Guidance and Control of Aerospace Vehicles	3	0	0	3	3
3	PCC	18AE2024	Aircraft Instrumentation & Control Laboratory	0	0	3	3	1.5
4	PEC		Professional Elective Courses-5	3	0	0	3	3
5	PEC		Professional Elective Courses-6	3	0	0	3	3
6	PEC		Open Elective Courses-III	3	0	0	3	3
7	ISP	18AE2997	Project Work-Literature Survey	-	-	-	5	3
8	ISP	ITP2902	Internship/ Industrial Training-II	15 days				1
<b>Total Contact Hours per Week</b>							<b>26</b>	
<b>Total Credits</b>								<b>20.5</b>

### SEMESTER-VIII

Sl.No	Category	Code No.	Name of the Course	L	T	P	TCH	Credits
1	ISP	18AE2999	Project Work – Full Semester	-	-	-	40	10
2	ISP	18AE2998	Project Work – Part Semester				20	5
<b>Total Credits</b>								<b>10/5</b>

**Table AE-2**  
**LIST OF COURSES**

Sl.No	Code No.	Name of the Course	L	T	P	Credits
1	18AE2001	Introduction to Aerospace Engineering	3	0	0	3
2	18AE2002	Aerospace Materials and Processes	3	0	0	3
3	18AE2003	Basic of Fluid Mechanics	3	0	0	3
4	18AE2004	Fluid Mechanics Laboratory	0	0	2	1
5	18AE2005	Strength of Materials	3	0	0	3
6	18AE2006	Strength of Materials Laboratory	0	0	2	1
7	18AE2007	Thermodynamics	3	0	0	3
8	18AE2008	Thermodynamics Laboratory	0	0	2	1
9	18AE2009	Aerodynamics	3	0	0	3
10	18AE2010	Aerospace Structures-I	3	0	0	3
11	18AE2011	Propulsion-I	3	0	0	3
12	18AE2012	Propulsion Laboratory	0	0	3	1.5
13	18AE2013	Airplane performance	3	0	0	3
14	18AE2014	Gas dynamics	3	0	0	3
15	18AE2015	Aerodynamics Laboratory	0	0	3	1.5
16	18AE2016	Aerospace Structures-II	3	0	0	3
17	18AE2017	Aerospace Structures Laboratory	0	0	3	1.5
18	18AE2018	Propulsion-II	3	0	0	3
19	18AE2019	Aircraft Stability and Control	3	0	0	3
20	18AE2020	Flight Stability and Aeromodelling Laboratory	0	0	2	1
21	18AE2021	CAD/CAM Laboratory	0	0	3	1.5
22	18AE2022	Aircraft Instrumentation & Avionics	3	0	0	3

23	18AE2025	Space Dynamics	3	0	0	3
24	18AE2026	Aircraft Design Project	0	0	4	2