



Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur

(An Autonomous Institution Affiliated to RTM Nagpur University, Nagpur)

SCHEME OF INSTRUCTION & SYLLABI

Programme: B. Tech **Aeronautical Engineering**



Scheme of Instructions: Second Year B. Tech. in Aeronautical Engineering (As Per NEP 2020)

Semester-III

S N.	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs		CT/IA	CA	ESE		
1	III	PCC	AE	BAE32301	Fluid Mechanics & Machinery	T	3	-	3	3	30	10	60	3 Hrs	100
2	III	PCC	AE	BAE32302	Solid Mechanics	T	3	-	3	3	30	10	60	3 Hrs	100
3	III	PCC	AE	BAE32303	Introduction to Aeronautical Engineering	T	3	-	3	3	30	10	60	3 Hrs	100
4	III	OEC	-	B\$\$323XX	Open Elective-I	T	4	-	4	4	30	10	60	3 Hrs	100
5	III	HSSM	BA	BBA32308	Engineering Economics for Managers	T	2	-	2	2	14	6	30	2 Hrs	50
6	III	MDM	S&H	BSH32301	Advance Mathematics	T	2	-	2	2	14	6	30	2 Hrs	50
7	III	PCC	AE	BAE32304	Fluid Mechanics & Machinery Lab	P	-	2	2	1	-	25	25	2 Hrs	50
8	III	PCC	AE	BAE32305	Solid Mechanics Lab	P	-	2	2	1	-	25	25	2 Hrs	50
9	III	CEP	AE	BAE32307	Community Engineering Project	P	-	4	4	2	-	50	-	2 Hrs	50
Total							17	08	25	21	148	152	350	22 Hrs	650

Course Category	HSSM (Humanities Social Science & Management)	BSC (Basic Science Course)	ESC (Engg. Science Course)	PCC (Programme Core Courses)	PEC (Program Elective Courses)	OEC (Open Elective Courses)	MDM (Multi-disciplinary Courses)	SEC (Skill Course)	ELC/FP/CEP (Experiential Learning Courses)	CC (Liberal Learning Courses)
Credits	2	--	--	11	--	4	2	-	2	--
Cumu.Sum	8	16	13	11	--	4	2	4	2	4

PROGRESSIVETOTALCREDITS:43+21=64

				June, 2024	1.00	Applicable
Chairperson	Dean Academics	Vice Principal	Principal	Date of Release	Version	For AY 2024-25 Onwards



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Semester-IV

S N.	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs		CT/IA	CA	ESE		
1	IV	PCC	AE	BAE32401	Fundamentals of Thermodynamics	T	3	-	3	3	30	10	60	3 Hrs	100
2	IV	PCC	AE	BAE32402	Aerodynamics-I	T	3	-	3	3	30	10	60	3 Hrs	100
3	IV	PCC	AE	BAE32403	Aerospace Materials	T	3	-	3	3	30	10	60	3 Hrs	100
4	IV	PCC	AE	BAE32404	Fundamentals of Thermodynamics Lab	P	-	2	2	1	-	25	25	2 Hrs	50
5	IV	PCC	AE	BAE32405	Aero Modeling Lab	P	-	2	2	1	-	25	25	2 Hrs	50
6	IV	VSEC	AE	BAE32407	Computer Aided Drafting Lab	P	-	4	4	2	-	50	50	2 Hrs	100
7	IV	OEC	-	B\$\$324XX	Open Elective-II	T	3	-	3	2	14	6	30	3 Hrs	50
8	IV	HSSM	MBA	BBA32403	Industrial Management	T	2	-	2	2	14	6	30	2 Hrs	50
9	IV	AEC	BSH	BSH32404	Leadership and Team Dynamics	P	-	4	4	2	-	50	50	-	100
10	IV	MDM	ME	BME32410	Advance Manufacturing Technology	T	2	-	2	2	14	6	30	2 Hrs	50
Total							16	12	28	21	132	198	420	24 Hrs	750

Course Category	HSSM (Humanities Social Science & Management)	BSC (Basic Science Course)	ESC (Engg. Science Course)	PCC (Programme Core Courses)	PEC (Program Elective Courses)	OEC (Open Elective Courses)	MDM (Multi-disciplinary Courses)	VSEC (Vocational and Skill Course)	ELC/FP/CEP (Experiential Learning Courses)	CC (Liberal Learning Courses)
Credits	4	--	--	11	--	2	2	2	--	--
Cumu. Sum	12	16	13	22	--	6	4	6	2	4

Progressive Total Credits =64+21 = 85

				Dec, 2024	1.00	Applicable
BoS Chairman	Dean Academics	Vice Principal	Principal	Date of Release	Version	For AY 2024-25 Onwards

Head of Department / Dean Academics
Aeronautical Engineering
Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur



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Semester-V

S N.	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs		CT/IA	CA	ESE		
1	V	PCC	AE	BAE33501	Mechanics of Machines	T	3	-	3	3	30	10	60	3 Hrs	100
2	V	PCC	AE	BAE33502	Aircraft Propulsion	T	3	-	3	3	30	10	60	3 Hrs	100
3	V	PCC	AE	BAE33503	Aerodynamics-II	T	3	-	3	3	30	10	60	3 Hrs	100
4	V	PCC	AE	BAE33508	Mechanics of Machines Lab	P	-	2	2	1	-	25	25	2 Hrs	50
5	V	PCC	AE	BAE33509	Aircraft Propulsion Lab	P	-	2	2	1	-	25	25	2 Hrs	50
6	V	PCC	AE	BAE33510	Aerodynamics Lab	P	-	2	2	1	-	25	25	2 Hrs	50
7	V	OEC	-	BAE33511	Open Elective-III	T	2	-	2	2	14	6	30	2 Hrs	50
8	V	PEC	AE	BAE33504-07	Program Elective-I	T	4	-	4	4	30	10	60	3 Hrs	100
9	V	MDM	ME	BME33501	Heat Transfer	T	4	-	4	4	30	10	60	3 Hrs	100
Total							19	06	25	22	164	131	405	23 Hrs	700

Course Category	HSSM (Humanities Social Science & Management)	BSC (Basic Science Course)	ESC (Engg. Science Course)	PCC (Programme Core Courses)	PEC (Program Elective Courses)	OEC (Open Elective Courses)	MDM (Multi-disciplinary Courses)	SEC (Skill Course)	ELC/FP/CEP (Experiential Learning Courses)	CC (Liberal Learning Courses)
Credits	--	--	--	12	4	2	4	--	--	--
Cumu. Sum	12	16	13	34	4	8	8	6	2	4

PROGRESSIVETOTALCREDITS:85+22=107

				June, 2025	1.00	Applicable
Chairperson	Dean Academics	Vice-Principal Dr. Pragati Patil	Principal Dr. Premarand Naktode	Date of Release	Version	For AY 2025-26 Onwards

Head
Aeronautical Engineering
TGPCET, Nagpur

Dean Academics
Tulsiramji Gaikwad-Patil
College of Engineering
and Technology, Nagpur

Vice-Principal
Tulsiramji Gaikwad Patil College of
Engineering & Technology, Nannur

Principal
TGPCET, Nagpur



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Scheme of Instructions: Third Year B. Tech. in Aeronautical Engineering (As Per NEP 2020)

Semester-VI

S N.	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs		CT/IA	CA	ESE		
1	VI	PCC	AE	BAE33601	Aircraft Structures	T	3	-	3	3	30	10	60	3 Hrs	100
2	VI	PCC	AE	BAE33602	Rocket Propulsion	T	3	-	3	3	30	10	60	3 Hrs	100
3	VI	PEC	AE	BAE33603-06	Program Elective-II	T	3	-	3	3	30	10	60	3 Hrs	100
4	VI	PEC	AE	BAE33607-10	Program Elective-III	T	3	-	3	3	30	10	60	3 Hrs	100
5	VI	MDM	IT	BIT33615	Artificial Intelligence for Engineers	T	2	-	2	2	14	06	30	2 Hrs	50
6	VI	PCC	AE	BAE33611	Aircraft Structure Lab	P	-	4	4	2	-	25	25	2 Hrs	50
7	VI	PCC	AE	BAE33612	Rocket Propulsion Lab	P	-	4	4	2	-	25	25	2 Hrs	50
8	VI	VEC	AE	BAE33613	Computational Analysis Lab	P	-	4	4	2	-	25	25	2 Hrs	50
Total							14	12	26	20	134	121	345	20 Hrs	600

Course Category	HSSM (Humanities Social Science & Management)	BSC (Basic Science Course)	ESC (Engg. Science Course)	PCC (Programme Core Courses)	PEC (Program Elective Courses)	OEC (Open Elective Courses)	MDM (Multi-disciplinary Courses)	SEC (Skill Course)	ELC/FP/CEP (Experiential Learning Courses)	CC (Liberal Learning Courses)
Credits	--	--	--	10	6	--	2	2	--	--
Cumu. Sum	12	16	13	44	10	08	10	08	02	04

PROGRESSIVE TOTAL CREDITS:107+20=127

				Nov, 2025	1.00	Applicable
Chairperson Head	Dean Academics	Vice Principal	Principal	Date of Release	Version	For AY2025-26 Onwards

Aeronautical Engineering
TGPCET, Nagpur

Tulsiramji Gaikwad-Patil
College Of Engineering
and Technology, Nagpur

Dr. Premanand Naktode
Principal
TGPCET, NAGPUR
TGPCET, Nagpur



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Scheme of Instructions: Fourth Year B. Tech. in Aeronautical Engineering (As Per NEP 2020)

Semester-VII

S N.	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs		CT/IA	CA	ESE		
1	VII	PCC	AE	BAE34701	Flight Mechanics	T	3	-	3	3	30	10	60	3 Hrs	100
2	VII	PCC	AE	BAE34702	Aircraft Design	T	4	-	4	4	30	10	60	3 Hrs	100
3	VII	PCC	AE	BAE34703	Airport Planning and Management	T	3	-	3	3	30	10	60	3 Hrs	100
4	VII	PEC	AE	BAE34704--07	Program Elective-IV	T	3	-	3	3	30	10	60	3 Hrs	100
5	VII	MDM	ECE	BIT33616	Internet of Things	T	3	-	3	3	30	10	60	3 Hrs	100
6	VII	MDM	ECE	BIT33617	Internet of Things Lab	T	2	-	2	1		25	25	2Hrs	50
7	VII	PROJ	AE	BAE34709	Project Work	P	-	08	08	4	-	100	100	2 Hrs	200
8	VII	AEC	AE	BAE34710	Sustainable Development Goals	T	2	-	2	2	14	6	30	2 Hrs	50
Total							20	8	28	23	164	181	455	21Hrs	800

Course Category	HSSM (Humanities Social Science & Management)	BSC (Basic Science Course)	ESC (Engg. Science Course)	PCC (Programme Core Courses)	PEC (Program Elective Courses)	OEC (Open Elective Courses)	MDM (Multi-disciplinary Courses)	SEC (Skill Course)	ELC/FP/CEP (Experiential Learning Courses)	CC (Liberal Learning Courses)
Credits	--	--	--	10	03	--	04	02	4	--
Cumu. Sum	12	16	13	54	13	08	14	10	06	4

PROGRESSIVE TOTAL CREDITS:127+23=150

				March, 2026	1.00	Applicable For AY2023-24 Onwards
Chairperson Head Aeronautical Engineering TGPCET, Nagpur	Director Academics/ Vice Principal Tulsiramji Gaikwad College Of Engineering And Technology, Nagpur	Director Administration Dr. Premnand Naktode Principal TGPCET, Nagpur	Principal	Date of Release	Version	



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Semester-VIII

S N.	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credit s	% Weightage			ESE Duration	Total Marks
							L	P	Hrs		CT/IA	CA	ESE		
1	VIII	RM	AE	BAE34801	Research Methodology/NPTEL	T	4	-	-	4	30	10	60	3Hrs	100
2	VIII	CEP	AE	BAE34802	On Job Training/ Industrial Training	T	-	24	24	12	-	100	200	2 Hrs	300
Total							-	24	24	16	30	110	260	2 Hrs	400

Course Category	HSSM (Humanities Social Science & Management)	BSC (Basic Science Course)	ESC (Engg. Science Course)	PCC (Programme Core Courses)	PEC (Program Elective Courses)	OEC (Open Elective Courses)	MDM (Multi- disciplinary Courses)	SEC (Skill Course)	ELC/FP/CEP (Experiential Learning Courses)	CC (Liberal Learning Courses)
Credits	--	--	--	-	-	--	--	--	16	--
Cumu. Sum	12	16	13	56	13	08	14	08	22	04

PROGRESSIVE TOTAL CREDITS:150+16=166

				March, 2026	1.00	Applicable For AY2023-24 Onwards
Chairperson Head Aeronautical Engineering TGPCET, Nagpur	Director Academics/ Vice Principal Tulsiramji Gaikwad College Of Engg And Technology, Nag.	Director Administration Dr. Hiremanand Naktode Principal TGPCET, Nagpur	Principal	Date of Release	Version	



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List of **Program Electives** offered By Aeronautical Engineering Department

Program Elective- I	Program Elective-II	Program Elective- III	Program Elective- IV
Semester V	Semester VI	Semester VI	Semester VII
BAE33504: Boundary Layer Theory	BAE33603: Drone Technology	BAE33607: Control Theory & Systems	BAE34704: Unmanned Aerial Vehicle and Systems
BAE33505: Aircraft Systems & Instruments	BAE33604: Spacecraft Technology	BAE33608: Aviation Management	BAE34705: Composite Materials & NDT
BAE33506: Space Flight Mechanics	BAE33605: Aircraft Navigation & Communication Systems	BAE33609: Helicopter Engineering	BAE34706: Vibrations and Aero-elasticity
BAE33507: Industrial Aerodynamics	BAE33606: Aircraft Maintenance & Repair	BAE33610: Finite Element Methods (FEM)	BAE34707: Computational Fluid Dynamics

Programme: Aeronautical Engineering

List of **Open Electives** offered By **Aeronautical Engineering** Department (NBA Accredited if applicable)

Open Elective-I	Open Elective-II	Open Elective-III
Semester-III	Semester-IV	Semester-V
BAE32310: Introduction to Aerospace Engineering	BAE32406: Avionics	BAE33511: Unmanned Aerial Systems

 Chairperson Head	 Director Academics/ Vice Principal	 Director Administration	 Principal	March, 2026 Date of Release	1.00 Version	Applicable For AY2023-24 Onwards
Aeronautical Engineering TGPCET, Nagpur	Director Academics Tulsiramji Gaikwad College Of Engineering And Technology, Nagpur	Dr. Premanand Naktode Principal TGPCET, Nagpur				



Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur




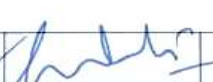
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Semester-I	04	08	05	--	--	--	--	02	--	02	21
Semester-II	02	08	08	--	--	--	--	02	--	02	22
Semester-III	02	--	--	11	--	04	02	--	02	--	21
Semester-IV	04	--	--	11	--	02	02	02	--	--	21
Semester-V		--	--	12	04	02	04	--	--	--	22
Semester-VI		--	--	10	06	--	02	02	--	--	20
Semester-VII	--	--	--	10	03	--	04	02	4	--	23
Semester-VIII		--	--	-	-	--	--	--	16	--	16
Cumu. Sum	12	16	13	54	13	8	14	10	22	4	166

 Chairperson Head Aeronautical Engineering TGPCET, Nagpur	 Director Academics/ Vice Principal Tulsiramji Gaikwad College Of Engineering And Technology, Nag.	 Director Administration	 Principal Dr. Premanand Naktode Principal TGPCET, Nagpur	March, 2026 Date of Release	1.00 Version	Applicable For AY2023-24 Onwards
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