

# **AEROSPACE ENGINEERING**

**COURSES/CREDIT DISTRIBUTION OF AEROSPACE ENGINEERING DEPARTMENT****I. Basic Science Courses (BSC)**

<b>Semester I</b>					
<b>Course code</b>	<b>Course name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
PYN 101	Oscillations and Optics	3	1/2	2/2	4
<b>Semester II</b>					
<b>Course code</b>	<b>Course name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
MAN 109	Numerical Analysis	3	1	0	4
PYN 106	Electromagnetic Theory	3	1/2	2/2	4

**II. Engineering Science Courses (ESC)**

<b>Semester II</b>					
<b>Course code</b>	<b>Course name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
ESC 101	Engineering Drawing	2	0	4	4
<b>Semester III</b>					
<b>Course code</b>	<b>Course name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
ESC 201	Thermodynamics	3	1	0	4
<b>Semester IV</b>					
ESC 205	Introduction to Electronics	3	1	0	4

**III. Departmental Core Courses (DCC)**

<b>Course code</b>	<b>Course name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
AEN 101	Introduction to Aerospace Engineering	2	0	0	2
AEN 102	Elements of Aerodynamics	3	0	2	4
AEN 103	Aircraft systems & instrumentation	3	0	2	4
AEN 104	Workshop Project	0	0	4	2
AEN 201	Aircraft materials & Processes	3	1	0	4
AEN 202	Aircraft Propulsion	3	0	2	4
AEN 203	Aircraft Performance	3	1	0	4
AEN 204	Aircraft Structures	3	0	2	4
AEN 205	Technical Communication	0	0	3	2
AEN 206	Engineering Analysis and Design	3	1	0	4
AEN 207	Aero Engine Design	3	0	2	4
AEN 208	Aircraft Structural Analysis & Design	3	0	2	4
AEN 209	Aircraft Stability and control	3	1	0	4
AEN 210	Compressible and finite wing Aerodynamics	3	0	2	4
AEN 301	Vibrations and Aero elasticity	3	1	0	4
AEN 302	Gas Dynamics	3	1	0	4
AEN 303	Airplane Design	3	1	0	4
AEN 304	Computational Fluid Dynamics	3	0	2	4
AEN 305	Space Dynamics	3	1	0	4

**IV. Departmental Elective courses (DEC)****Group-I (Choose any ONE course)**

<b>Course code</b>	<b>Course name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
AEN 401	Helicopter Dynamics	3	1	0	4
AEN 402	Aircraft Maintenance and Airworthiness	3	1	0	4
AEN 403	Wind Turbines	3	1	0	4
AEN 404	Kinematics & Dynamics of Machines	3	1	0	4
AEN 405	Experimental Aerodynamics	3	1	0	4

**Group-2 (Choose any TWO courses)**

Course code	Course name	L	T	P	Credits
AEN 411	Avionics	3	1	0	4
AEN 412	Viscous flow Theory	3	1	0	4
AEN 413	Rocket Propulsion	3	1	0	4
AEN 414	Wind Tunnel Techniques	3	1	0	4
AEN 415	Composite materials	3	1	0	4
AEN 416	Missile Technology	3	1	0	4
AEN 417	Air Transportation and Operations	3	1	0	4

**V. Open elective Courses (OEC)**

Course code	Course name	L	T	P	Credits
AEN 461	Aircraft Performance	3	1	0	4
AEN 462	Aircraft Structures	3	1	0	4
AEN 463	Space Dynamics	3	1	0	4
AEN 464	Introduction to Aerospace Engineering	3	1	0	4
AEN 465	Rocket Propulsion	3	1	0	4
AEN 466	Aircraft Propulsion	3	1	0	4

**VI. Departmental Honors Courses (DHC)**

Course code	Course name	L	T	P	Credits
AEN 421	Advanced Aerodynamics	3	1	0	4
AEN 422	Automatic flight control	3	1	0	4
AEN 423	Aircraft Design & Optimization	3	1	0	4
AEN 424	Dynamics of Aerospace Structures	3	1	0	4
AEN 425	Advanced Aerospace Propulsion systems	3	1	0	4

**VII. Minor Specialization Courses (MSC)**

Course code	Course name	L	T	P	Credits
AEN 431	Introduction to Aerospace Engineering	3	1	0	4
AEN 432	Aircraft Structures	3	0	2	4
AEN 433	Elements of Aerodynamics	3	0	2	4
AEN 434	Aircraft Performance	3	1	0	4
AEN 435	Aircraft Propulsion	3	0	2	4

**TEACHING SCHEME FOR B.E. AEROSPACE ENGINEERING****First Year****Semester-I**

Course Code	Subject	Credit	Category
MAN101	Mathematics-I	4	BSC
AEN 101	Introduction to Aerospace Engineering	2	DCC
CSN104/105	Computer Programming (Basic/Advanced)	4	ESC
PYN 101	Oscillations and Optics	4	BSC
HSS101/ (102/103)	Ethics and Self- Awareness/ Communication Skills (Basic/Advanced)	2	HSSC
GSC101	Introduction to Environmental Science	3	GSC
	<b>Total</b>	<b>19</b>	

**Semester-II**

Course Code	Subject	Credit	Category
MAN 109	Numerical Analysis	4	BSC
HSS(102/103)/ 101/	Communication Skills / Ethics and Self- Awareness (Basic/Advanced)	2	HSSC
PYN 106	Electromagnetic Theory	4	BSC
ESC101	Engineering Drawing	4	ESC
AEN 102	Elements of Aerodynamics	4	DCC
AEN 103	Aircraft systems & instrumentation	4	DCC
AEN 104*	Workshop Project*	2	DCC
	<b>Total</b>	<b>24</b>	

\*To be conducted during summer vacation. Evaluation marks to be carried over to next semester

**Second Year****Semester-I**

Course Code	Subject	Credit	Category
ESC 201	Thermodynamics	4	ESC
AEN 201	Aircraft materials & Processes	4	DCC
AEN 202	Aircraft Propulsion	4	DCC
AEN 203	Aircraft Performance	4	DCC
AEN 204	Aircraft Structures	4	DCC
	Psychology	3	HSSMEC
AEN 205	Technical communication	2	DCC
	<b>Total</b>	<b>25</b>	

**Semester-II**

Course Code	Subject	Credit	Category
AEN 206	Engineering Analysis and Design	4	DCC
ESC 205	Introduction to Electronics	4	ESC
AEN 207	Aero Engine Design	4	DCC
AEN 208	Aircraft Structural Analysis & Design	4	DCC
AEN 209	Aircraft Stability & Control	4	DCC
AEN 210	Compressible and finite wing Aerodynamics	4	DCC
AEN 221	Educational Tour	Non-credit	DCC
	<b>Total</b>	<b>24</b>	

### Third Year

#### Semester-I

Course Code	Subject	Credit	Category
AEN 301	Vibrations & Aero elasticity	4	DCC
AEN 302	Gas Dynamics	4	DCC
AEN 303	Airplane Design	4	DCC
AEN 304	Computational Fluid Dynamics	4	DCC
AEN 305	Space Dynamics	4	DCC
AEN 321	Minor Project	2	DCC
	<b>Total</b>	<b>22</b>	

#### Semester-II

Course Code	Subject	Credit	Category
AEN 331	Semester Internship*	20	DCC
	<b>Total</b>	<b>20</b>	

\*Internship Seminar presentations may be held a week before the date of Registration in Semester-I of Fourth Year

### Fourth Year

#### Semester-I

Course Code	Subject	Credit	Category
	Open Elective	4	GSEC/MEC
	Department Elective course-I	4	DEC
	Department Elective course-II	4	DEC
AEN 441	Major Project	2	DCC
AEN 431 AEN 421	Introduction to Aerospace Engineering Advanced Aerodynamics	4	MSC/DHC
AEN 432 AEN 422	Aircraft Structures Automatic Flight control	4	MSC/DHC
	<b>Total</b>	<b>14/22</b>	

#### Semester-II

Course Code	Subject	Credit	Category
	Cross Cultural Management	3	HSSMEC
	Department Elective course-III	4	DEC
AEN 451	Major Project	6	DCC
AEN 433 AEN 423	Elements of Aerodynamics Aircraft Design & Optimization	4	MSC/DHC
AEN 434 AEN 424	Aircraft Performance Dynamics of Aerospace Structures	4	MSC/DHC
AEN 435 AEN 425	Aircraft Propulsion Advanced Aerospace Propulsion systems	4	MSC/DHC
	<b>Total</b>	<b>13/25</b>	

**COURSES OFFERED BY APPLIED SCIENCE DEPARTMENT TO ALL DEPARTMENTS**

**I. Departmental Elective courses (DEC)**

**Group-I**

Course code	Course name	L	T	P	Credits
CHN 401	Modern Instrumental Methods Of Chemical Analysis	3	1	0	4
PYN 401	Advanced Physics	3	1	0	4
PYN 402	Crystal Physics	3	1	0	4
PYN 403	Solid State Physics	3	1	0	4
MAN 401	Operation Research	3	1	0	4
MAN 402	Optimization Techniques	3	1	0	4

**II. Minor Specialization Courses For 7<sup>th</sup> Semester**

Course Code	Course Name	L	T	P	Credits
<b>Humanities Section</b>					
HSM 401	Principles of Management	2	2	0	4
HSM 402	Business Environment and Business Laws	2	2	0	4
HSM 431	Managing Innovation and Change	2	2	0	4
<b>Chemistry Section</b>					
CHN 431	Inorganic Chemistry	3	0	3	4
CHN 432	Organic Chemistry	3	0	3	4
<b>Physics Section</b>					
PYN 431	Quantum Mechanics	3	1	0	4
PYN 432	Statistical Physics	3	1	0	4
<b>Mathematics Section</b>					
MAN 431	Algebra	3	1	0	4
MAN 432	Number Theory	3	1	0	4

**Minor Specialization Courses For 8<sup>th</sup> Semester**

Course Code	Course Name	L	T	P	Credits
<b>Humanities Section</b>					
HSM 404	Financial Management	2	2	0	4
HSM 405	Marketing Management	2	2	0	4
HSM 406	Human Resource Management	2	2	0	4
HSM 432	Business Research	2	2	0	4
<b>Chemistry Section</b>					
CHN 433	Physical Chemistry / Analytical Chemistry	3	1	0	4
CHN 434	Environmental Chemistry	3	1	0	4
CHN 435	Recent Advances in Chemical Sciences	3	1	0	4
<b>Physics Section</b>					
PYN 433	Nuclear Physics	3	1	0	4
PYN 434	Experimental Nuclear Physics	3	1	0	4
PYN 435	X-Ray Crystallography	3	1	0	4
<b>Mathematics Section</b>					
MAN 433	Fourier Series and Integral Transforms	3	1	0	4
MAN 434	Calculus of Variations	3	1	0	4
MAN 435	Algebraic Coding Theory	3	1	0	4