

**Course Structure of the B.Tech. Programme  
in  
Space Science and Engineering  
(From AY 2023-2024 onwards)**

Course structure of B.Tech. 1<sup>st</sup> year

Semester I

Course Code	Course Title	Weekly Contact Hours (L-T-P)	Credits
EE 1XX	Basic Electrical Engineering	1-1-0	2
ME 1XX	Engineering Mechanics	2-0-0	2
PH 101	Basics of Physics	2-1-0	3
PH 156	Physics Lab- I	0-0-2	1
MA 105 (A)	Calculus-I (half Semester)	3-1-0 (=4/2)	2
MA 105 (B)	Calculus-II (half Semester)	3-1-0 (=4/2)	2
CH 103	Chemistry	3-0-0	3
CH 153	Chemistry Lab	0-0-2	1
HS 1XX	Language and Composition	2-0-0	2
ZXXX	Flexible Elective (HSS)	1-0-0	1
NO 101	National Sports Organization (NSO)	0-0-0	P/NP
Total		14-3-4	19

Semester II

Course Code	Course Title	Weekly Contact Hours (L-T-P)	Credits
BSE 102	Biosciences	2-1-0	3
MA 106 (A)	Linear Algebra (half Semester)	2-1-0 (=3/2)	1.5
MA 106 (B)	Differential Equations-I (half Semester)	2-1-0 (=3/2)	1.5
ES 1XX	Environmental Studies: Scientific and Engineering Aspects (half Semester)	2-1-0 (=3/2)	1.5
HS 1XX	Environmental Studies: Social Aspects (half Semester)	2-1-0 (=3/2)	1.5
HS 108	Fundamentals of Economics	2-0-0	2
IC 1XX	Makerspace	1-0-6	4
CS 103	Computer Programming	2-0-0	2
IC 151	Computer Programming Lab	0-0-3	1.5
ZXXX	Flexible Elective	1-0-0	1
ZXXX	Flexible Elective	1-0-0	1
ZXXX	Flexible Elective (HSS)	1-0-0	1
NO 101	National Sports Organization (NSO)	0-0-0	P/NP
Total		14-3-9	21.5

2<sup>nd</sup> Year B.Tech. in Space Science and Engineering

Semester III

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
ZZxxx	Course I - Minor Program	X-X-X	3
MA 203	Complex Analysis and Differential Eqns II	3-1-0	4
PH 201	Classical Mechanics	2-1-0	3
PH 220	Fundamental Concepts of Solid State Engineering	2-1-0	3
AA 241	Wave Phenomenon and Optics	2-1-0	3
AA 205	Electronics -1	2-1-0	3
PH 291	Physics lab -II	0-0-3	1.5
AA 293	Electronics and Optics Lab - I	0-0-3	1.5
AA XXX	Departmental Elective - I	2-1-0	3
Total		13-6-6	22.5/25

Semester IV

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
ZZ XXX	Course II - Minor Program	X-X-X	3
MA 204	Numerical Methods	2-0-2	3
PH 210	Quantum Mechanics - I	2-1-0	3
PH 211	Thermal Physics	2-1-0	3
AA 206	Electronics - II	2-1-0	3
AA 208	Engineering Electromagnetics	2-0-0	2
AA 294	Electronics Lab II	0-0-3	1.5
AA XXX	Departmental Elective - II	2-1-0	3
	Institute Open Elective - I	2-1-0	3
Total		14-5-5	21.5/24.5

3<sup>rd</sup> Year B.Tech. in Space Science and Engineering

Semester V

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
ZZ XXX	Course III - Minor Program	X-X-X	3
AA307	Space Systems - Orbits and Payloads	2-1-0	3
AA309	Detectors for Space - I	2-1-0	3
AA 311	Statistical Physics and Radiative Transfer	2-1-0	3
AA 313	Fluid Dynamics	2-0-0	2
AA 315	Data Analytics and Visualization for Space	1-0-4	3
AA XXX	Departmental Elective III	2-1-0	3
ZZ XXX	Institute Open Elective-II	2-1-0	3
Total		13-5-4	20/23

Semester VI

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
ZZxxx	Course IV - Minor Program	X-X-X	3
AA 306	Signals & Communication in Space	2-0-2	3
AA 312	Atmospheric Physics and Remote Sensing	2-1-0	3
AA 308	Guidance, Navigation and Control	2-1-0	3
AA 304	Radiowave Propagation & Antenna Applications	2-0-2	3
AA XXX	Departmental Elective IV	2-0-2	3
AA XXX	Departmental Elective V	2-1-0	3
ZZ XXX	Institute Open Elective - III	2-1-0	3
Total		14-4-6	21/24

4<sup>th</sup> Year B.Tech. in Space Science and Engineering

Semester VII

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
AA 499	B Tech Project (BTP)  Student can do BTech project either outside the institute or within the institute under a supervision of an IIT Indore Faculty.	0-0-32	16
	Internship 1		1
	Internship 2		1
Total		0-0-32	18

Semester VIII

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
AA XXX	Departmental Elective - VI	2-1-0	3
AA XXX	Departmental Elective - VII	2-1-0	3
ZZ XXX	Institute Open Elective - IV	2-1-0	3
ZZ XXX	Institute Open Elective - V	2-1-0	3
ZZ XXX	Institute Open Elective - VI	2-1-0	3
Total		10-5-0	15

List of Flexible Elective for B.Tech. 1st Year

Semester I

Course Code	Course Title	Teaching Hours (L-T-P)	Credits
HS 1XX	Stress and Mental Health	1-0-0	1
HS 1XX	Frontiers of Thinking	1-0-0	1
HS 1XX	History of Tribal and Folk Art	1-0-0	1
HS 1XX	Cultural Sociology	1-0-0	1

Semester II

Course Code	Course Title	Teaching Hours (L-T-P)	Credits
EE 1XX	Basic Electronics Engineering	1-0-0	1
ME 1XX	Basic Manufacturing Processes	1-0-0	1
ME 1XX	Basic Thermal Engineering	1-0-0	1
PH 1XX	Basics of Laser Engineering	1-0-0	1
HS 1XX	Stress and Mental Health	1-0-0	1
HS 1XX	Frontiers of Thinking	1-0-0	1
HS 1XX	History of Tribal and Folk Art	1-0-0	1
HS 1XX	Cultural Sociology	1-0-0	1
AA 101	Introduction to Space Engineering	1-0-0	1
CE 1XX	Computations in Civil Engineering	1-0-0	1
MM 1XX	Introduction to Materials Engineering	1-0-0	1

List of the Departmental Electives for Semester III\*

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
AA 201	Introduction to Astronomy	2-1-0	3
AA203	Introduction to Atmospheric and Earth Sciences	2-1-0	3

List of the Departmental Electives for Semester IV\*

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
AA 204	Introduction to Space Exploration	2-1-0	3
AA 202N	Astronomical Techniques	2-1-0	3

List of the Departmental Electives for Semester V\*

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
AA 317	Galaxies and Cosmology	2-1-0	3
AA 303	IoT for Space	2-0-2	3
AA 319	Launch Vehicle and Propulsion Systems	2-1-0	3

List of the Departmental Electives for Semester VI\*

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
AA 310	Satellite Imaging	2-0-2	3
AA 318	Meteorology and Climate Modelling	2-0-2	3
AA 320	Detectors for Space - II	2-0-2	3
AA 322	Computational Electromagnetics	2-0-2	3
AA 301	High Energy Astrophysics and Transient Sky	2-1-0	3
AA374	Computational Fluids and Structures	2-0-2	3

List of the Departmental Electives for Semester VIII\*

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
AA 476/676	Satellite Based Navigation Systems	2-0-2	3
AA 412/612	Microwave Remote Sensing	2-0-2	3
AA 408/608	Astrostatistics	2-1-0	3
AA 474/674	Radio Astronomy	2-1-0	3
AA 472/672	Galactic and Extragalactic Astronomy	2-1-0	3
AA 409/609	Computational Methods in Astronomy and Space Sciences	2-0-2	3
AA404/604	Spacecraft Attitude Control and Dynamics	2-0-2	3

DAASE courses listed as institute open electives for Semester VIII\*\*

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
AA4XX/6XX	Advanced IoT for Space	2-0-2	3
AA4XX/6XX	Advanced Optical Instrumentation	2-0-2	3
AA 4XX/6XX	Space Economics, Policy & Space Act and Benefits	2-1-0	3

\*The list of departmental electives will be updated as and when new courses get approved for the same.

\*\*The list of DAASE courses listed as institute open electives will be updated as and when new courses get approved for the same.