

**Curriculum of the BTech Programme
in
Space Science and Engineering
(AY 2023-2024 onwards)**

1st Year BTech in Space Science and Engineering

Semester I

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
MA105	Calculus	3-1-0	4
PH101	Basics of Physics	2-1-0	3
CH103	Chemistry	2-1-0	3
ME106	Basic Mechanical engineering	1-1-0	2
EE104	Basic electrical and electronics engineering	1-1-0	2
PH 156	Physics Lab-I	0-0-2	1
CH153	Chemistry lab	0-0-2	1
HS159	English language and communication	0-2-0	2
HSXXX	HSS Flex XXX	1-0-0	1
	Total	10-7-4	19

Semester II

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
MA106	Linear algebra and ordinary differential equations I	2-1-0	3
BSE102	Bio Sciences	2-1-0	3
CS103	Computer programming	2-0-0	2
*XXX	First year elective -I	1-0-0	1
*XXX	First year elective-II	1-0-0	1
IC151	Computer programming lab	0-0-3	1.5
MSXXX	Hands on XXX	1-0-6	4
HS108	Fundamentals of economics	2-0-0	2
HS XXX	Environmental Studies	2-1-0	3
HSXXX	HS flex XXX	1-0-0	1
	Total	14-3-9	21.5

2nd Year BTech 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

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

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

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

3rd Year BTech 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

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

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

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
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4th Year BTech in Space Science and Engineering
Semester VII

Course Code	Course Name	Weekly Contact Hours L-T-P	Credit
AA 499	B Tech Project (BTP) 1. Student can do BTech project either outside the institute or within the institute under a supervision of an IIT Indore Faculty. 2. Summer Internship, if any, will be part of B Tech Project. 3. The choice is to be made latest by 30th April. 4. Duration: 6-7 months during 2 nd week of May to Last week of Nov. 5. Last Date of Thesis submission: 1st week of Dec. 6. Last Date of Submission of Grades: 2nd week of Dec.	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

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.

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