

Indian Institute of Space Science and Technology
Department of Space, Govt. of India
Thiruvananthapuram



Curriculum and Syllabus for
B.TECH Physical Sciences- 2012

Semester I

Code	Course Title	L	T	P	C
MA111	Calculus	2	1	0	3
PH111	Physics I	3	1	0	4
CH111	Chemistry	2	1	0	3
AE111	Basic Mechanical Engineering	2	1	0	3
AV111	Basic Electrical Engineering	2	1	0	3
HS111	Communication Skills I	1	0	0	1
PH131	Physics Lab I	0	0	3	1
CH131	Chemistry Lab	0	0	3	1
AE131	Basic Engineering Lab	0	0	3	1
HS131	Communication Skills Lab I	0	0	3	1
	Total	12	5	12	21

Semester II

Code	Course Title	L	T	P	C
MA121	Vector Calculus and Differential Equations	2	1	0	3
PH121	Physics II	3	1	0	4
CH121	Materials Science	2	1	0	3
AE121	Engineering Mechanics	2	1	0	3
AV121	Basic Electronics Engineering	2	1	0	3
HS121	Communication Skills II	1	0	0	1
PC141	Physics and Materials Science Lab	0	0	3	1
AE141	Engineering Graphics	1	0	3	2
AV141	Basic Electrical and Electronics Engineering Lab	0	0	3	1
HS141	Communication Skills Lab II	0	0	3	1
	Total	13	5	12	22

Semester III

Code	Course Title	L	T	P	C
MA211	Linear Algebra, Numerical Analysis and Transforms	2	1	0	3
PH211	Optics and Electromagnetic Waves	3	1	0	4
PH212	Mathematical Physics	3	1	0	4
RS211	Remote Sensing and Applications	3	0	0	3
AV215	Computer Organization and DBMS	3	0	0	3
HS211	Introduction to Economics	2	0	0	2
MA231	C Programming Lab	0	0	3	1
PH231	Optics Lab I	0	0	3	1
RS231	Remote Sensing and Applications Lab	0	0	3	1
	Total	16	2	9	22

Semester IV

Code	Course Title	L	T	P	C
MA221	Partial Differential Equations, Calculus of Variations and Complex Analysis	2	1	0	3
PH221	Modern Optics	3	0	0	3
PH222	Classical Mechanics	3	1	0	4
ES221	Earth System Science	3	0	0	3
AV221	Measurement and Instrumentation	3	0	0	3
HS221	Introduction to Social Science & Ethics	2	0	0	2
PH241	Optics Lab II	0	0	3	1
ES241	Earth System Science Lab	0	0	3	1
AV231	Measurement and Instrumentation Lab	0	0	3	1
	Total	17	1	9	21

Semester V

Code	Course Title	L	T	P	C
MA311	Probability and Statistics	3	0	0	3
PH311	Quantum Mechanics	3	1	0	4
ES311	Atmospheric and Ocean Sciences	3	0	0	3
AP311	Introduction to Astronomy and Astrophysics	3	0	0	3
AV321	Digital Signal Processing	3	0	0	3
CH311	Environmental Science and Engineering	2	0	0	2
PH331	Computational Physics Lab	0	0	3	1
AV341	Digital Signal Processing Lab	0	0	3	1
	Total	17	1	6	20

Semester VI

Code	Course Title	L	T	P	C
PH321	Statistical Mechanics	3	0	0	3
PH322	Atomic, Molecular and Nuclear Physics	3	0	0	3
RS321	Pattern Recognition	3	1	0	4
ES321	Introduction to Space Vehicles	2	0	0	2
E01	Elective I	3	0	0	3
E02	Elective II	3	0	0	3
E03	Elective III	3	0	0	3
PH341	Modern Physics Lab	0	0	3	1
ES341	Astronomy Lab	0	0	3	1
	Total	20	1	6	23

PS451 : Summer Internship Training : 3 Credits**Semester VII**

Code	Course Title	L	T	P	C
HS411	Principles of Management Systems	3	0	0	3
E04	Elective IV	3	0	0	3
E05	Elective V	3	0	0	3
E06	Elective VI	3	0	0	3
I01	Institute Elective	3	0	0	3
ES431	Earth & Space Science Lab	0	0	3	1
PS452	Seminar	0	0	0	2
	Total	15	0	3	18

Semester VIII

Code	Course Title	L	T	P	C
PS453	Comprehensive Viva-Voce	3	0	0	3
PS454	Project Work	0	0	0	12
	Total	0	0	0	15

Abbreviations

MA – Mathematics; PH – Physics; CH – Chemistry; HS – Humanities; AE – Aerospace Engineering; AV – Avionics; L – Lecture; T – Tutorial; P – Practical; C – Credits.

Sl. No	Course Code	Course Title	Earth System Science	Astrophysics and Planetary Sciences	Remote Sensing
1	ES461	Atmospheric Structure, Dynamics and Air-Sea Interaction	√	-	-
2	ES462	Solid Earth and its Dynamics	√	-	-
3	ES463	Biosphere and Hydrosphere	√	-	-
4	ES464	Gas Dynamics	√	√	-
5	ES465	Numerical Weather Prediction and Modeling	√	-	-
6	ES466	Earth Observation from Space	√	-	-
7	ES467	Solar Terrestrial Relations	√	-	-
8	ES468	Estimation and Stochastic Process	√	√	√
9	ES469	Astronomical Techniques	-	√	-
10	ES470	Radiation Process in Astrophysics	-	√	-
11	ES471	Structure and Evolution of Stars	-	√	-
12	ES472	Cosmology and Astro Biology	-	√	-
13	ES473	Diffused Matter in Space	-	√	-
14	ES474	High Energy Astrophysics	-	√	-
15	ES475	Galaxies (Structure, Dynamics and Evolution)	-	√	-
16	ES476	Solar System Science	-	√	-
17	ES477	Image Interpretation and Digital Image Processing	-	-	√
18	ES478	Optical Sensors	-	-	√
19	ES479	Geographic Information System	-	-	√
20	ES480	Introduction to Photogrammetry	-	-	√
21	ES481	Microwave Remote Sensing	-	-	√
22	ES482	Cartography and Navigation	-	-	√
23	ES483	Data Archival and Mining	-	-	√
24	ES484	Quantitative Methods in Remote Sensing	-	-	√
25	ES485	Physics of Stars	-	√	-
26	ES486	Planetary Geosciences	√	-	-
27	ES487	LIDAR Remote Sensing	-	-	√
28	ES488	Climate Change	√	-	-
29	ES489	Tropical Meteorology	√	-	-
30	ES490	Universe in a Nutshell	-	√	-
31	ES491	Introduction to Planetary Geoscience	-	√	-
32	ES492	Processing of Satellite Remote Sensing Data	-	-	√
33	ES493	Hyperspectral Remote Sensing	-	-	√
34	ES494	General Relativity and Cosmology	-	√	-