

BACHELOR OF SCIENCE (HONORS) PHYSICS

Programme Code: PHB

Duration: 3 Years

PROGRAMME AND EXAMINATION SCHEME

FROM SESSION: 2019-2020 ONWARDS



**Department of Physics
Faculty of Science**

**CHHATRAPATI SHIVAJI MAHARAJ UNIVERSITY
PANVEL, NAVI MUMBAI**

PROGRAMME SCHEME

Semester	Department Specific Course			Generic Elective Course	Ability Enhancement Core Course	Skill Enhancement Course	Weekly Contact hours	Total Credits
I	DSC-1 Mathematical Physics-I (4-0-4) 6	DSC-2 Mechanics (4-0-4) 6		GE-1 Generic Elective -1 (4-0-4) 6	AECC -1 English Communications (2-0-0) 2		26	20
II	DSC-3 Mathematical Physics-II (4-0-4) 6	DSC-4 Thermal Physics (4-0-4) 6		GE-2 Generic Elective -2 (4-0-4) 6	AECC -2 Environmental Science (2-0-0) 2		26	20
III	DSC-5 Mathematical Physics-III (4-0-4) 6	DSC-6 Waves and Optics (4-0-4) 6	DSC-7 Digital Systems and Applications (4-0-4) 6	GE-3 Generic Elective -3 (4-0-4) 6		SEC -1 Skill Enhancement Courses -1 (0-0-2) 2	34	26
IV	DSC-8 Electricity and Magnetism (4-0-4) 6	DSC-9 Elements of Modern Physics (4-0-4) 6	DSC-10 Analog Systems and Applications (4-0-4) 6	GE-4 Generic Elective -4 (4-0-4) 6		SEC -2 Skill Enhancement Courses -2 (0-0-2) 2	34	26
V	DSC-11 Quantum Mechanics and Applications (4-0-4) 6	DSC-12 Solid State Physics (4-0-4) 6	DSE-1 Discipline Specific Elective-1 (4-0-4) 6	DSE-2 Discipline Specific Elective-2 (4-0-4) 6			32	24
VI	DSC-13 Electromagnetic Theory (4-0-4) 6	DSC-14 Statistical Mechanics (4-0-4) 6	DSE-3 Discipline Specific Elective-3 Lab (4-0-4) 6	DSE-4 Discipline Specific Elective-4 Lab (4-0-4) 6			32	24
Total								140

Teaching & Evaluation Scheme SEMESTER I

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credits
DSC	PHBC101	Mathematical Physics-I	4	0	0	30	70	100	4
DSC	PHBC102	Mechanics	4	0	0	30	70	100	4
GE	**BG101	Generic Elective - I	4	0/1	4/0	30	70	100	4
AECC	ENBC101	English Communication	2	0	0	15	35	50	2
DSC	PHBC191	Mathematical Physics-I Lab	0	0	4	15	35	50	2
DSC	PHBC192	Mechanics Lab	0	0	4	15	35	50	2
GE	**BG191	Generic Elective - I Lab	0	1/0	0/4	15	35	50	2
		Total	14	0	12	150	350	500	20

SEMESTER II

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credits
DSC	PHBC201	Mathematical Physics - II	4	0	0	30	70	100	4
DSC	PHBC202	Thermal Physics	4	0	0	30	70	100	4
GE	**BG201	Generic Elective - II	4	0/1	4/0	30	70	100	4
AECC	ESBC201	Environmental Science	2	0	0	15	35	50	2
DSC	PHBC291	Electricity and Magnetism Lab	0	0	4	15	35	50	2
DSC	PHBC292	Thermal Physics Lab	0	0	4	15	35	50	2
GE	**BG291	Generic Elective - II Lab	0	1/0	0/4	15	35	50	2
		Total	14	0	12	150	350	500	20

SEMESTER III

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credits
DSC	PHBC301	Mathematical Physics - III	4	0	0	30	70	100	4
DSC	PHBC302	Waves and Optics	4	0	0	30	70	100	4
DSC	PHBC303	Digital Systems and Applications	4	0	0	30	70	100	4
GE	**BG301	Generic Elective - II	4	0/1	4/0	30	70	100	4
DSC	PHBC391	Mathematical Physics - III	0	0	4	15	35	50	2
DSC	PHBC392	Thermal Physics	0	0	4	15	35	50	2
DSC	PHBC393	Digital Systems and Applications Lab	0	0	4	15	35	50	2
GE	**BG391	Generic Elective - II Lab	0	1/0	0/4	15	35	50	2
SEC	PHBS304	Skill Enhancement Course-I	0	0	2	15	35	50	2
		Total	16	0	22	185	455	650	26

SEMESTER IV

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credits
DSC	PHBC401	Electricity and Magnetism	4	0	0	30	70	100	4
DSC	PHBC402	Elements of Modern Physics	4	0	0	30	70	100	4
DSC	PHBC403	Analog Systems and Applications	4	0	0	30	70	100	4
GE	**BG401	Generic Elective - III	4	0/1	4/0	30	70	100	4
DSC	PHBC491	Electricity and Magnetism	0	0	4	15	35	50	2
DSC	PHBC492	Elements of Modern Physics	0	0	4	15	35	50	2
DSC	PHBC493	Analog Systems and Applications	0	0	4	15	35	50	2
GE	**BG491	Generic Elective - III	0	1/0	0/4	15	35	50	2
SEC	PHBS404	Skill Enhancement Course-II	0	0	2	15	35	50	2
		Total	16	0	22	185	455	650	26

SEMESTER V

Course Type	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credits
DSC	PHBC501	Quantum Mechanics and Applications	4	0	0	30	70	100	4
DSC	PHBC502	Solid State Physics	4	0	0	30	70	100	4
DSE	PHBE50*	Discipline Specific Elective-I	4	0	0	30	70	100	4
DSE	PHBE50*	Discipline Specific Elective-II	4	0/1	4/0	30	70	100	4
DSC	PHBC591	Quantum Mechanics and Applications Lab	0	0	4	15	35	50	2
DSC	PHBC592	Solid State Physics Lab	0	0	4	15	35	50	2
DSE	PHBE59*	Discipline Specific Elective-I Lab	0	0	4	15	35	50	2
DSE	PHBE59*	Discipline Specific Elective-II Lab	0	1/0	0/4	15	35	50	2
		Total	16	0	20	180	420	600	24

SEMESTER VI

Course Code	Course Code	Course Name	L	T	P	IA	UE	Total Marks	Credits
DSC	PHBC601	Electromagnetic Theory	4	0	0	30	70	100	4
DSC	PHBC602	Statistical Mechanics	4	0	0	30	70	100	4
DSE	PHBE60*	Discipline Specific Elective-III	4	0	0	30	70	100	4
DSE	PHBE60*	Discipline Specific Elective-IV	4	0/1	4/0	30	70	100	4
DSC	PHBC691	Electromagnetic Theory Lab	0	0	4	15	35	50	2
DSC	PHBC692	Statistical Mechanics Lab	0	0	4	15	35	50	2
DSE	PHBE69*	Discipline Specific Elective-III Lab	0	0	4	15	35	50	2
DSE	PHBE69*	Discipline Specific Elective-IV Lab	0	1/0	0/4	15	35	50	2
		Total	16	0	20	180	420	600	24

Ability Enhancement Compulsory Courses (AECC)

Semester	Offering Department	Course Code (T+P)	Course Name	(L-T-P)	Credits
I	English	ENBC101	English Communication	2-0-0	2
II	Basic Sciences	ESBC201	Environmental Studies	2-0-0	6

List of Generic Electives Available for students of B.Sc. (Hons.) Physics

Semester	Offering Department	Course Code (T+P)	Course Name	(L-T-P)	Credits
I	Mathematics	MTBG101	Algebra	5-1-0	6
II	Mathematics	MTBG201	Differential Calculus & Vector Calculus	5-1-0	6
III	Mathematics	MTBG301	Differential Equation	5-1-0	6
IV	Mathematics	MTBG401	Real Analysis	5-1-0	6
I	Chemistry	CHBG101+CHBG191	Inorganic Chemistry	4-0-4	6
II	Chemistry	CHBG201+CHBG291	Organic Chemistry	4-0-4	6
III	Chemistry	CHBG301+CHBG391	Physical Chemistry	4-0-4	6
IV	Chemistry	CHBG401+CHBG491	Basic Analytical Chemistry	4-0-4	6

List of Generic Electives offered by Department of Physics for students in B.Sc. (Hons.) Mathematics, and B.Sc. (Hons.) Chemistry

Semester	Course Code (T+P)	Course Name	(L-T-P)	Credits
I	PHBG102+PHBG192	Mechanics	4-0-4	6
II	PHBG202+PHBG292	Thermal Physics	4-0-4	6
III	PHBG302+PHBG392	Waves and Optics	4-0-4	6
IV	PHBG402+PHBG492	Elements of Modern Physics	4-0-4	6

Department-Specific Electives offered by Department of Physics for students in B.Sc. (PCM)

Semester	Course Code (T+P)	Course Name	(L-T-P)	Credits
V	PHBC501+PHBC591	Quantum Mechanics and Applications	4-0-4	6
V	PHBC502+PHBC592	Solid State Physics	4-0-4	6
VI	PHBC601+PHBC691	Electromagnetic Theory	4-0-4	6
VI	PHBC602+PHBC692	Statistical Mechanics	4-0-4	6

List of Department-Specific Electives (DSE-1 to DSE-4) offered by Department of Physics for students in B.Sc. (Hons.) (4 to be selected, 2 in each of 5th and 6th semester)

Semester	Course Code (T+P)	Course Name	(L-T-P)	Credits
V	PHBE501+PHBE591	Experimental Techniques	4-0-4	6
V	PHBE502+ PHBE592	Devices and Instruments	4-0-4	6
V	PHBE503+ PHBE593	Advanced Mathematical Physics-I	4-0-4	6
V	PHBE504+PHBE594	Communication Electronics	4-0-4	6
V	PHBE505	Classical Dynamics	5-0-1	6
VI	PHBE601	Nuclear and Particle Physics	5-0-1	6
VI	PHBE602+PHBE692	Astronomy and Astrophysics	4-0-4	6
VI	PHBE603+PHBE693	Advanced Mathematical Physics-II	4-0-4	6
VI	PHBE604	Atmospheric Physics	5-0-1	6
VI	PHBE605	Applied Dynamics	5-0-1	6
VI	PHBE606+PHBE696	Nanomaterials and Applications	4-0-4	6
VI	PHBE607+PHBE697	Physics of the Earth	4-0-4	6
VI	PHBE608	Biophysics	5-0-1	6
VI	PHBE681	Dissertation*	-	6

* Optional Dissertation or project work in place of one Discipline Specific Elective paper (DSE-4)(6 credits) in 6th Semester

List of Skill Enhancement Course (SEC-1 & SEC-2) offered by Department of Physics (Any 2 to be selected)

Semester	Course Code	Course Name	(L-T-P)	Credits
III	PHBS391	Physics Workshop Skills	0-0-2	2
III	PHBS392	Computational Physics Skills	0-0-2	2
III	PHBS393	Electrical circuits and Network Skills	0-0-2	2
IV	PHBS491	Renewable Energy and Energy harvesting	0-0-2	2
IV	PHBS492	Radiation Safety	0-0-2	2
IV	PHBS493	Weather Forecasting	0-0-2	2