



ODISHA UNIVERSITY OF TECHNOLOGY AND RESEARCH

Techno Campus, Mahalaxmi Vihar, Ghatikia, Bhubaneswar-751029.

Syllabus Structure (Effective from 2023-24)

School/ Department: School of Basic Sciences & Humanities

Course: Integrated M. Sc., Programme: Physics, Duration: 5 years (Ten Semesters)

Abbreviation used:

I:	Integrated Program	PC:	Professional Core	SE:	Seminar
P:	Postgraduate Program	PE:	Professional Elective	L:	Lecture
GE:	Generic Elective/ Interdisciplinary	CC:	Core Course	T:	Tutorial
AECC:	Ability Enhancement Compulsory Course	CE:	Core Elective	P:	Practical
SEC:	Skill Enhancement Course	OE:	Open Elective	PH:	Physics
DSE:	Discipline Specific Elective	MC:	Mandatory Course	CY:	Chemistry
IA*:	Internal Assessment	LC:	Lab Course	MH:	Mathematics
EA:	End-Semester Assessment	AC:	Audit course	HS:	Humanities
PA:	Practical Assessment	PR:	Project	CS:	Computer Science

*Internal Assessment Mark (30 marks) consists of (i) Mid Semester (20 marks), (ii) Quiz/ Assignment (10 marks)

Subject Code Format:

A	A	B	C	C	C
School/ Dept. (Offering)		Level	Serial Number		
BH: Basic Sciences and Humanities CS: Computer Sciences EE: Electrical Sciences EI: Electronic Sciences IP: Infrastructure and Planning ME: Mechanical Sciences BT: Biotechnology TE: Textile Engineering		1: UG/ Int. Msc. (1 st Year) 2: UG/ Int. Msc. (2 nd Year) 3: UG/ Int. Msc. (3 rd Year) 4: UG/ Int. Msc. (4 th Year) 5: UG/ Int. Msc. (5 th Year) 6: PG (1 st Year) 7: PG (2 nd Year) 8: Ph.D.	001 to 999		

1st SEMESTER

Subject Type	Subject Code	Subject Name	Teaching Hours			Credit	Maximum Marks			
			L	T	P		IA	EA	PA	Total
AECC-1	BH1431	ENGLISH FOR COMMUNICATION	2	0	0	2	30	70	-	100
AECC-1 Lab	BH1531	ENGLISH FOR COMMUNICATION LABORATORY	0	0	2	1	-	-	100	100
SEC-1		FUNDAMENTALS OF COMPUTERS AND PROGRAMMING IN C	3	0	0	3	30	70	-	100
SEC Lab-1		PROGRAMMING IN C LABORATORY	0	0	2	1	-	-	100	100
GE-1	BH1301	CHEMISTRY-I	3	0	0	3	30	70	-	100
GE Lab-1	BH1511	CHEMISTRY LABORATORY-I	0	0	3	1	-	-	100	100
GE-2	BH1341	MATHEMATICS-I	2	1	0	3	30	70	-	100
PC-1	BH1161	CLASSICAL MECHANICS AND SPECIAL THEORY OF RELATIVITY	4	0	0	4	30	70	-	100
PC Lab-1	BH1561	MECHANICS LABORATORY-I	0	0	3	2	-	-	100	100
PC-2	BH1163	MATHEMATICAL PHYSICS-I	4	0	0	4	30	70	-	100
PC Lab-2	BH1563	MATHEMATICAL PHYSICS LABORATORY-I	0	0	3	2	-	-	100	100
Total credit=			18	1	13	26	180	420	500	1100



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Syllabus Structure (Effective from 2023-24)

2nd SEMESTER

Subject Type	Subject Code	Subject Name	Teaching Hours			Credit	Maximum Marks			
			L	T	P		IA	EA	PA	Total
AECC-2	BH1432	COMMUNICATION IN PRACTICE	2	0	0	2	30	70	-	100
AECC Lab-2	BH1532	COMMUNICATION IN PRACTICE LABORATORY	0	0	2	1	-	-	100	100
SEC-2		OOPS USING C++	3	0	0	3	30	70	-	100
SEC Lab-2		OOPS USING C++ LABORATORY	0	0	2	1	-	-	100	100
GE-3	BH1302	CHEMISTRY-II	3	0	0	3	30	70	-	100
GE Lab-3	BH1512	CHEMISTRY LABORATORY-II	0	0	3	1	-	-	100	100
GE-4	BH1342	MATHEMATICS-II	2	1	0	3	30	70	-	100
PC-3	BH1162	ELECTRICITY AND MAGNETISM	4	0	0	4	30	70	-	100
PC Lab-3	BH1562	ELECTRICITY AND MAGNETISM LABORATORY	0	0	3	2	-	-	100	100
PC-4	BH1164	WAVE AND OPTICS	4	0	0	4	30	70	-	100
PC Lab-4	BH1564	WAVE AND OPTICS LABORATORY	0	0	3	2	-	-	100	100
Total credit=			18	1	13	26	180	420	500	1100

3rd SEMESTER

Subject Type	Subject Code	Subject Name	Teaching Hours			Credit	Maximum Marks			
			L	T	P		IA	EA	PA	Total
GE-5	BH2301	CHEMISTRY-III	3	0	0	3	30	70	-	100
GE Lab-5	BH2511	CHEMISTRY LABORATORY-III	0	0	3	1	-	-	100	100
GE-6	BH2341	MATHEMATICS-III	2	1	0	3	30	70	-	100
PC-5	BH2161	THERMAL PHYSICS AND PROPERTIES OF MATTER	4	0	0	4	30	70	-	100
PC Lab-5	BH2561	THERMAL PHYSICS AND PROPERTIES OF MATTER LABORATORY	0	0	3	2	-	-	100	100
PC-6	BH2163	ANALOG SYSTEM AND APPLICATION	4	0	0	4	30	70	-	100
PC Lab-6	BH2563	ANALOG SYSTEM LABORATORY	0	0	3	2	-	-	100	100
PC-7	BH2165	MATHEMATICAL PHYSICS -II	4	0	0	4	30	70	-	100
PC Lab-7	BH2565	MATHEMATICAL PHYSICS LABORATORY-II	0	0	3	2	-	-	100	100
Total credit=			17	1	12	25	150	350	400	900



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Techno Campus, Mahalaxmi Vihar, Ghatikia, Bhubaneswar-751029.

Syllabus Structure (Effective from 2023-24)

4th SEMESTER

Subject Type	Subject Code	Subject Name	Teaching Hours			Credit	Maximum Marks			
			L	T	P		IA	EA	PA	Total
AECC-3	BH2402	ENVIRONMENTAL SCIENCE	2	0	0	2	30	70	-	100
SEC-3	BH2432	ORGANIZATIONAL BEHAVIOR	2	0	0	2	30	70	-	100
GE-7	BH2342	MATHEMATICS-IV	2	1	0	3	30	70	-	100
PC-8	BH2162	ELEMENTS OF MODERN PHYSICS	4	0	0	4	30	70	-	100
PC Lab-8	BH2562	MODERN PHYSICS LABORATORY	0	0	3	2	-	-	100	100
PC-9	BH2164	DIGITAL SYSTEM AND APPLICATION	4	0	0	4	30	70	-	100
PC Lab-9	BH2564	DIGITAL SYSTEM LABORATORY	0	0	3	2	-	-	100	100
PC-10	BH2166	MATHEMATICAL PHYSICS-III	4	0	0	4	30	70	-	100
PC Lab-10	BH2566	MATHEMATICAL PHYSICS LABORATORY-III	0	0	3	2	-	-	100	100
Total credit=			18	1	9	25	180	420	300	900

5th Semester

Subject Type	Subject Code	Subject Name	Teaching Hours			Credit	Maximum Marks			
			L	T	P		IA	EA	PA	Total
PC-11	BH3161	QUANTUM MECHANICS AND APPLICATION	4	0	0	4	30	70	-	100
PC Lab-11	BH3561	QUANTUM MECHANICS LABORATORY	0	0	3	2	-	-	100	100
PC-12	BH3163	SOLID STATE PHYSICS	4	0	0	4	30	70	-	100
PC Lab-12	BH3563	SOLID STATE PHYSICS LABORATORY	0	0	3	2	-	-	100	100
DSE-1	BH3261 / BH3263	ADVANCED MATHEMATICAL PHYSICS / COMMUNICATION SYSTEM	4	0	0	4	30	70	-	100
DSE Lab-1	BH3565 / BH3567	ADVANCED MATHEMATICAL PHYSICS LABORATORY / COMMUNICATION SYSTEM LABORATORY	0	0	3	2	-	-	100	100
DSE-2	BH3265 / BH3267	FLUID MECHANICS / APPLIED DYNAMICS	4	0	0	4	30	70	-	100
DSE Lab-2	BH3569 / BH3571	FLUID MECHANICS LABORATORY / APPLIED DYNAMICS LABORATORY	0	0	3	2	-	-	100	100
Total credit=			16	0	12	24	120	280	400	800



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Techno Campus, Mahalaxmi Vihar, Ghatikia, Bhubaneswar-751029.

Syllabus Structure (Effective from 2023-24)

6th Semester

Subject Type	Subject Code	Subject Name	Teaching Hours			Credit	Maximum Marks			
			L	T	P		IA	EA	PA	Total
PC-13	BH3162	ELECTROMAGNETIC THEORY	4	0	0	4	30	70	-	100
PC Lab-13	BH3562	ELECTROMAGNETIC LABORATORY	0	0	3	2	-	-	100	100
PC-14	BH3164	STATISTICAL MECHANICS	4	0	0	4	30	70	-	100
PC Lab-14	BH3564	STATISTICAL MECHANICS LABORATORY	0	0	3	2	-	-	100	100
DSE-3	BH3262 / BH3264 / BH3266	INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS / PHYSICS OF DEVICES AND COMMUNICATION / EMBEDDED SYSTEMS - INTRODUCTION TO MICROCONTROLLER	4	0	0	4	30	70	-	100
DSE Lab-3	BH3566 / BH3568 / BH3570	INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS LABORATORY / PHYSICS OF DEVICES AND COMMUNICATION LABORATORY / EMBEDDED SYSTEMS - INTRODUCTION TO MICROCONTROLLER LABORATORY	0	0	3	2	-	-	100	100
DSE-4	BH3268 / BH3270	MEASUREMENT TECHNIQUES / DISSERTATION	4	0	0	4	30	70	-	100
DSE Lab-4	BH3572 / BH3574	MEASUREMENT TECHNIQUES LABORATORY / DISSERTATION	0	0	3	2	-	-	100	100
Total credit=			16	0	12	24	120	280	400	800

7th Semester

Subject Type	Subject Code	Subject Name	Teaching Hours			Credit	Maximum Marks			
			L	T	P		IA	EA	PA	Total
PC-15	BH4161	CLASSICAL MECHANICS	4	0	0	4	30	70	-	100
PC-16	BH4163	MATHEMATICAL METHODS IN PHYSICS	4	0	0	4	30	70	-	100
PC-17	BH4165	QUANTUM MECHANICS-I	4	0	0	4	30	70	-	100
PC-18	BH4167	ELECTRODYNAMICS	4	0	0	4	30	70	-	100
PC Lab-15	BH4561	GENERAL PHYSICS LABORATORY	0	0	3	1.5	-	-	100	100
PE		RESEARCH METHODOLOGY	0	0	3	2	30	70	-	100
OE Lab		ADVANCED COMPUTATIONAL PHYSICS LABORATORY	0	0	3	1.5	-	-	100	100
Total credit=			16	0	9	21	150	350	200	700



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Syllabus Structure (Effective from 2023-24)

8th Semester

Subject Type	Subject Code	Subject Name	Teaching Hours			Credit	Maximum Marks			
			L	T	P		IA	EA	PA	Total
PC-19	BH4162	STATISTICAL MECHANICS	3	0	0	3	30	70	-	100
PC-20	BH4164	PHYSICS OF SEMICONDUCTOR DEVICES	4	0	0	4	30	70	-	100
PC-21	BH4166	QUANTUM MECHANICS-II	4	0	0	4	30	70	-	100
PC-22	BH4168	EXPERIMENTAL TECHNIQUES	4	0	0	3	30	70	-	100
PC-23	BH4170	ELECTRONICS	3	0	0	3	30	70	-	100
PC Lab-16	BH4562	ELECTROMAGNETIC AND OPTICS LABORATORY	0	0	3	1.5	-	-	100	100
PC Lab-17	BH4564	BASIC ELECTRONICS LABORATORY	0	0	3	1.5	-	-	100	100
Total credit=			18	0	6	20	150	350	200	700

9th Semester

Subject Type	Subject Code	Subject Name	Teaching Hours			Credit	Maximum Marks			
			L	T	P		IA	EA	PA	Total
PC-24	BH5161	ADVANCED QUANTUM MECHANICS AND QUANTUM FIELD THEORY	4	0	0	4	30	70	-	100
PC-25	BH5163	NUCLEAR AND PARTICLE PHYSICS	4	0	0	4	30	70	-	100
PC-26	BH5165	BASIC CONDENSED MATTER PHYSICS	4	0	0	4	30	70	-	100
PC-27	BH5167	NANO SCIENCE AND TECHNOLOGY	3	0	0	3	30	70	-	100
SEMINAR	BH5761	LITERATURE REVIEW AND SEMINAR	0	0	4	2	-	-	100	100
PC Lab-18	BH5561	ADVANCED ELECTRONICS LABORATORY	0	0	3	1.5	-	-	100	100
PC Lab-19	BH5563	BASIC CONDENSED MATTER PHYSICS LABORATORY	0	0	3	1.5	-	-	100	100
Total credit=			15	0	10	20	120	280	300	700

10th Semester

Subject Type	Subject Code	Subject Name	Teaching Hours			Credit	Maximum Marks			
			L	T	P		IA	EA	PA	Total
PC-28	BH5162	ATOMIC AND MOLECULAR PHYSICS	3	0	0	3	30	70	-	100
PE-1	BH5262 / BH5264	ADVANCED CONDENSED MATTER PHYSICS / ADVANCED PARTICLE PHYSICS	4	0	0	4	30	70	-	100
PE-2	BH5266 / BH5268 / BH5270	ADVANCED CHARACTERIZATION TECHNIQUES / VACUUM SCIENCE AND TECHNOLOGY / MATERIAL SCIENCE	3	0	0	3	30	70	-	100
PROJECT	BH5662	PROJECT	0	0	6	6	-	-	100	100
PC Lab-20	BH5562	MODERN PHYSICS LABORATORY	0	0	3	1.5	-	-	100	100
PE Lab-1	BH5564 / BH5566	ADVANCED CONDENSED MATTER PHYSICS LABORATORY / ADVANCED PARTICLE PHYSICS LABORATORY	0	0	3	1.5	-	-	100	100
Total credit=			10	0	12	19	90	210	300	600



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I.M.Sc Abstract of credit and marks distribution

Semester	Max. Credits	Max. Marks
1st	26	1100
2nd	26	1100
3rd	25	900
4th	25	900
5th	24	800
6th	24	800
Total=	150	5600

7th	21	700
8th	20	700
9th	20	700
10th	19	600
Total=	80	2700
G. Total=	230	8300