Karmaveer Bhaurao Patil University, Satara
Faculty of Science and Technology
B. Sc. (Physics)

Programme and Credit Structure as per NEP 2020

{Ref. Government of Maharashtra letter no. □□□□□.□□□□/□□□.□.□□/□□□□-□□□ □□ □□ □□□□□□: □□ □□□□□ □□□□}

The degree shall be titled as 'Bachelor of Science (Physics) under the faculty of Science and Technology

B. Sc. Sem. I & II from Academic Year 2024-25
B. Sc. Sem. III & IV from Academic Year 2025-26
B. Sc. Sem. V & VI from Academic Year 2026-27
B. Sc. Sem. VII&VIII from Academic Year 2027-28

Programme Outcomes for B. Sc. (Physics)

PO. No.	**Programme Outcomes** **After completing B. Sc. Programme the students will be able to…….**
PO-1	graduate with proficiency in the subject.
PO-2	continue higher studies in his subject.
PO-3	pursue higher studies abroad.
PO-4	appear for the examinations for jobs in government organizations.
PO-5	appear for jobs with minimum eligibility as science graduate.
PO-6	appear for industrial jobs with minimum eligibility as graduate.
PSO. NO	**Programme Specific Outcomes** **After completing B. Sc. (Physics) Programme the students will be able to…….**
PSO-1	understand the basics of Physics.
PSO-2	learn, design and perform experiments in the labs to demonstrate the concepts, principles and theories learned in the classrooms.
PSO-3	develop the ability to apply the knowledge acquired in the classroom and laboratories to specific problems in theoretical and experimental Physics.
PSO-4	identify their area of interest in academic, research and development.
PSO-5	perform job in various fields like science, engineering, education, banking, business and public service, etc. or be an entrepreneur with precision, analytical mind, innovative thinking, clarity of thought, expression, and systematic approach.

Semester, Credit Framework, NSQF Level and Exit Points

Sr. No.	**Semester**	**Year**	**Year**	**Credits**	**Level**	**Exit Points &Award**
1	Sem. I & II	2024-25	1Year	44	4.5	UG Certificate in Physics
2	Sem. III & IV	2025-26	2Year	88	5.0	UG Diploma in Physics
3	Sem. V &VI	2026-27	3Year	132	5.5	B. Sc. in Physics (UG Three Year Degree)
4	Sem. VII & VIII	2027-28	4Year	176	6.0	B. Sc. in Physics [Honors/Research] (UG Four Year Degree)

Credit Distribution

Sr. No.	Course	3 Year Degree Programme			4 Year Honors Degree Programme			4 Year Honors with Research Degree Programme		
		Courses (3 Yr)	Credits (3 Yr)	%	Courses (4 Yr)	Credits (4 Yr)	%	Courses (4 Yr)	Credits (4 Yr)	%
1	Major	26	52	39.39	34	80	45.45	32	72	40.91
2	Elective	04	08	6.06	08	16	9.09	08	16	9.09
3	IKS	02	04	3.03	02	04	2.27	02	04	2.27
4	VSC	04	08	6.06	04	08	4.55	04	08	4.55
5	FP	01	02	1.52	01	02	1.14	01	02	1.14
6	OJT	01	04	3.03	02	08	4.55	01	04	2.27
7	RP	00	00	0.00	00	00	00	02	12	6.82
8	SEC	03	06	4.55	03	06	3.41	03	06	3.41
9	CEP	01	02	1.52	01	02	1.14	01	02	1.14
Total (Major) (A)		**42**	**86**	**65.15**	**55**	**126**	**71.59**	**54**	**126**	**71.59**
1	Minor & RM	12	24	18.18	13	28	15.91	13	28	15.91
Total (Minor) (B)		**12**	**24**	**18.18**	**12**	**28**	**15.91**	**13**	**28**	**15.91**
1	OE	04	08	6.06	04	08	4.55	04	08	4.55
2	AEC	04	08	6.06	04	08	4.55	04	08	4.55
3	VEC	02	04	3.03	02	04	2.27	02	04	2.27
4	CC	01	02	1.52	01	02	1.14	01	02	1.14
Total (C)		**11**	**22**	**16.67**	**11**	**22**	**12.50**	**11**	**22**	**12.50**
Grand Total (A+B+C)		**65**	**132**	**100**	**79**	**176**	**100**	**78**	**176**	**100**

Duration:

- The program shall be a full-time program.
- The duration of program shall be three years for Bachelor of Science and four years for Bachelor of Science with Honors or Bachelor of Science with Research.
- Every year students will have exist option with:
- (1^{st} Year: Certificate, 2^{nd} Year: Diploma, 3^{rd} Year: Degree, 4^{th} Year: Honors / Research)
- These students are allowed to re-enter the degree program within three years and complete the degree program within the stipulated maximum period of Seven Years.

Eligibility: 12^{th} Pass with Science, or equivalent.

Medium of Instruction: The medium of instructions shall be in English.

- **Scheme of Examination & Standard of Passing (CCE and ESE As per the decision of the concern Board of Studies or Competent Authority):**
- End Semester Exam (ESE): 30 Marks (Min 12 Marks for Passing)
- Continuous Comprehensive Evaluation (CCE): 20 Marks (Min 08 Marks for Passing)
- Total Marks = 50 Marks
- Minimum 40% Marks Required for Passing and there is separate head of Passing for End Semester Examination (ESE) and Continuous Comprehensive Evaluation (CCE).
- A candidate who acquire 32 credits or more during semester – I & II shall be admitted to B. Sc. II (appear for semester – III & IV examination).
- However the candidate shall not be admitted to B.Sc. III (Semester - V) unless he/she passed in all the subjects at B.Sc. I (Semester - I & Semester - II) and acquire 32 credits or more during semester – III & IV.
- However the candidate shall not be admitted to B. Sc. IV (Semester - VII) unless he/she passed in all the subjects at B. Sc. I, II, and III.
- However under the National Education Policy the rules extended by KBP University, time to time regarding ATKT will be applicable.

Eligibility of the Core Faculty:

As per rules and regulations of Karmaveer Bhaurao Patil University, Satara and Govt. of Maharashtra.

Eligibility for Professor of Practice or Professional Trainer:

Any other eligibility as per the guidelines and regulations passed by concern board of studies,

academic council of the autonomous college and rules & regulations of Karmaveer Bhaurao Patil University, Satara and Government of Maharashtra and UGC norms.

Karmaveer Bhaurao Patil University, Satara

Faculty of Science and Technology

B. Sc. (Physics) Part-I

Semester I				
Sr. No.	**Components**	**Course Code**	**Course**	**Credits**
1	Course-I	BPT 111	Mechanics	02
		BPT 112	Electrostatics and Electronics	02
		BPP 113	Physics Practical Course –I based on Mechanics (BPT111) and Electrostatics and Electronics (BPT 112)	02
2	Course-II	-	DSC I, DSC II, DSP I	06
3	Course-III	-	DSC I, DSC II, DSP I	06
4	OE	BPTOE1	Instrumentation Studies P-I	02
5	IKS	BPTIKS 1	Introduction to Indian Knowledge System	02
			Total	**22**
Semester II				
Sr. No.	**Components**	**Course Code**	**Course**	**Credits**
1	Course-I	BPT 121	Gravitation and Properties of matter	02
		BPT 122	Electricity and Magnetism	02
		BPP 123	Physics Practical Course –II based on Gravitation and Properties of matter (BPT121) and Electricity and Magnetism (BPT 122)	02
2	Course-II	-	DSC III, DSC IV, DSP II	06
3	Course-III	-	DSC III, DSC IV, DSP II	06
4	OE	BPTOE2	Instrumentation Studies P-II	02
5	VEC	BPTVEC1	Democracy, Election and Indian Constitution	02
			Total	**22**
EXIT OPTION: Award of UG Certificate in Major **with 44 credits** & an additional 4 credits core NSQF Course/Internship OR Continue with Major & Minor.				

B. Sc. (Physics) Part-II

Semester III				
Sr. No.	**Components**	**Course Code**	**Course**	**Credits**
1	Major	BPT 231	Heat and Thermal Physics (P-V)	02
2	Major	BPT 232	Waves Oscillation and Sound (P-VI)	02
3	Major Lab-III	BPP 233	Practical Based on Paper V and Paper VI	02
4	Minor	-	DSC V, DSC VI, DSP III	06
5	OE	BPTOE3	Instrumentation Studies P-III	02
6	VSC	BPPVSC 1	Vocational Skill Course in Basic Electronics Circuits-I	02
7	SEC	BPPSEC 1	Mechanical and Electrical Skills	02
8	AEC	BPTAEC 1	English P-I	02
9	IKS	BPTIKS 2	Indian Astronomy and Metallurgy IKS P-II	02
			Total	**22**
Semester IV				
Sr. No.	**Components**	**Course Code**	**Course**	**Credits**
1	Major	BPT 241	Modern Physics and Electronics (P-VII)	02

2	Major	BPT 242	Optics and Lasers (P- VIII)	02
3	Major Lab IV	BPP 243	Practical Based on Paper VII and Paper VIII	02
4	Minor	-	DSC VII, DSC VIII, DSP IV	06
5	OE	BPTOE 4	Instrumentation Studies P-IV	02
6	VSC	BPPVSC 2	Physics in home appliances	02
7	SEC	BPPSEC 2	Computational Skills in Physics	02
8	AEC	BPTAEC 2	English P-II	02
9	VEC	BPTVEC 2	Environmental Studies	02
			Total	**22**
EXIT OPTION: Award of UG Diploma in Major and Minor with **88 Credits** & an additional 4 credits core NSQF Course/ Internship OR Continue with Major & Minor				

B. Sc. (Physics) Part-III

Semester V				
Sr. No.	**Components**	**Course Code**	**Course**	**Credits**
1	Major	BPT 351	Mathematical Physics (P-IX)	02
2	Major	BPT 352	Quantum Mechanics (P-X)	02
3	Major	BPT 353	Classical Mechanics and Electrodynamics (P-XI)	02
4	Electives (Any one out of two)	BPT 354	Electrical Winding and Modern Physics (P-XIIE1)	02
		BPT 354	Thin Film Technology (P-XIIE2)	02
5	Major Lab	BPP 355	Physics Practical Lab – V	02
6	Elective Lab	BPP 356	Physics Practical Elective Lab – I	02
7	VSC	BPPVSC 3	Vocational Skill Course in Basic Electronics Circuits-II	02
8	AEC	BPTAEC 3	English P-III	02
9	OJT	BPPOJT 1	On Job Training in Physics I	04
10	CEP	BPTCEP 1	Community Engagement Programme in Physics	02
			Total	**22**
Semester VI				
Sr.	**Components**		**Course**	**Credits**
1	Major	BPT 361	Nuclear and Particle Physics (P-XIII)	02
2	Major	BPT 362	Solid State Physics (P-XIV)	02
3	Major	BPT 363	Atomic, Molecular and Astrophysics (P-XV)	02
4	Electives (Any one out of two)	BPT 364	Solar Energy and Energy Harvesting (P-XVIE1)	02
		BPT 364	Material Characterizations (P-XVIE2)	02
5	Major Lab	BPP 365	Physics Practical Lab – VI	02
6	Elective Lab	BPP 366	Physics Practical Elective Lab – II	02
7	VSC	BPPVSC 4	Vocational Skill Course in Applied Physics-I	02
8	SEC	BPPSEC 3	AI in Physics	02
9	FP	BPTFP 1	Field Project in Physics	02
10	CC	BPTCC 1	Co-curricular Course in Physics	02
11	AEC	BPTAEC 4	English P-IV	02
			Total	**22**
EXIT OPTION: Award of UG Degree in Major with **132 credits** OR Continue with Major & Minor.				

B. Sc. (Physics) Part-IV Honors Degree

Semester VII				
Sr. No.	**Components**	**Course Code**	**Course**	**Credits**
1	Major	BPT 471	Mathematical Methods in Physics (P-XVII)	04
2	Major	BPT 472	Classical Mechanics (P-XVIII)	04
3	Major	BPT 473	Quantum Mechanics-I (P-XIX)	04
4	Electives (Any one out of two)	BPT 474	Atomic and Molecular Physics (P-XXE1)	02
		BPT 474	Optoelectronics and Photonics (P-XXE2)	02
5	Major Lab	BPP 475	Physics Practical Lab – VII	02
6	Elective Lab	BPP 476	Physics Practical Elective Lab – III	02
7	Minor	BPT 477	Research Methodology	04
			Total	**22**
Semester VIII				
Sr. No.	**Components**	**Course Code**	**Course**	**Credits**
1	Major	BPT 481	Quantum Mechanics II (P-XXI)	04
2	Major	BPT 482	Statistical Mechanics (P-XXII)	04
3	Major	BPT 483	Solid State Physics-I (P-XXIII)	04
4	Electives (Any one of two)	BPT 484	Condensed Matter Physics (P-XXIVE1)	02
		BPT 484	Laser Physics (P-XXIVE2)	02
5	Major Lab	BPP 485	Physics Practical Lab – VIII	02
6	Elective Lab	BPP 486	Physics Practical Elective Lab – IV	02
7	OJT	BPPOJT 2	On Job Training in Physics II	04
			Total	**22**
Award of Four year UG Honors Degree in Major and Minor with 176 credits.				

B. Sc. (Physics) Part-IV Honors with Research Degree

Semester VII				
Sr. No.	**Components**	**Course Code**	**Course**	**Credits**
1	Major	BPT 471	Mathematical Methods in Physics (P-XVII)	04
2	Major	BPT 478	Advanced Classical & Quantum Mechanics (P-XVIII)	04
3	Electives	BPT 474	Atomic and Molecular Physics (P-XIXE1) Optoelectronics and Photonics (P-XIXE2)	04
4	Major Lab	BPP 475	Physics Practical Lab – VII	02
5	Minor	BPT 477	Research Methodology	04
6	RP	BPPRP 1	Research Project in Physics I	04
			Total	**22**
Semester VIII				
Sr. No.	**Components**	**Course Code**	**Course**	**Credits**
1	Major	BPT 481	Quantum Mechanics II (P-XXI)	04
2	Major	BPT 482	Statistical Mechanics (P-XXII)	04
3	Electives	BPT 484	Condensed Matter Physics (P-XXIIIE1) Laser Physics (P-XXIIIE2)	04
4	Major Lab	BPP 485	Physics Practical Lab – VIII	02
5	RP	BPPRP 2	Research Project in Physics II	08
			Total	**22**
Award of Four year UG Honors Degree in Major and Minor with 176 credits.				

Chairman
BoS in Physics

Secretary
Academic Council

Chairman
Academic Council