



**Karmaveer Bhaurao Patil University, Satara**  
**Faculty of Science and Technology**

**B. Sc. (Data Science)**  
**Programme and Credit Structure as per NEP 2020**

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

The degree shall be titled as 'Bachelor of Science (Data Science) 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. (Data Science)**

<b>PO. No.</b>	<b>Programme Outcomes</b> <b>After completing B. Sc. Programme, the students will be able to.....</b>
PO-1	Develop the ability to critically analyze data, interpret results, and make informed decisions based on scientific evidence.
PO-2	problem-solving techniques to address and find solutions to scientific issues, utilizing appropriate tools and methods.
PO-3	Recognize and understand the ethical implications of scientific research and its applications, adhering to professional ethical standards.
PO-4	Collaborate effectively in multidisciplinary teams, exhibiting leadership and interpersonal skills to achieve common goals.
PO-5	Demonstrate proficiency in using scientific instruments, laboratory techniques, and computational tools relevant to their field of study.
PO-6	Understand the impact of scientific practices on the environment and society and contribute to sustainable development.
PO-7	Apply scientific knowledge to innovate, create new products or processes, and explore entrepreneurial opportunities in science-related fields.
PO-8	Acquire the ability to conduct experiments, analyze data, and present findings, demonstrating a solid understanding of scientific methodologies.
PO-9	Effectively communicate scientific information in written, oral, and visual formats to both scientific and non-scientific audiences.
PO-10	Integrate knowledge from various scientific disciplines to approach complex problems with a holistic and interdisciplinary perspective, enabling innovative solutions.
<b>PSO. NO</b>	<b>Programme Specific Outcomes</b> <b>After completing B. Sc. (Data Science) Program Student will be able to...</b>
PSO-1	Foundational Knowledge: Graduates will have a strong understanding of mathematical, statistical, and computational foundations necessary for data science.
PSO-2	Data Acquisition and Preparation: Graduates will be skilled in gathering data from various sources and preparing it for analysis through cleaning, transformation, and integration
PSO-3	Analytical Skills: Graduates will possess the ability to apply appropriate analytical techniques to derive insights from data and support decision-making processes.
PSO-4	Algorithm Development: Graduates will be capable of developing and implementing efficient algorithms for data analysis, machine learning, and predictive modeling.
PSO-5	Technical Proficiency: Graduates will demonstrate proficiency in using data science tools and programming languages such as Python, R, SQL, and relevant software like Jupyter, RStudio, and cloud platforms.
PSO-6	Big Data Handling: Graduates will be adept at working with large datasets using big data

	technologies such as Hadoop, Spark, and distributed computing frameworks.
PSO-7	Data Visualization: Graduates will be proficient in creating meaningful and impactful visual representations of data using tools like Tableau, Power BI, and visualization libraries in Python and R.
PSO-8	Ethical and Responsible Data Use: Graduates will understand and adhere to ethical standards and practices in data science, ensuring responsible use of data and maintaining data privacy and security.
PSO-9	Problem-Solving and Critical Thinking: Graduates will be able to apply critical thinking and problem-solving skills to identify, analyze, and provide solutions to complex data-driven problems.
PSO-10	Communication and Collaboration: Graduates will be effective communicators, able to present data-driven insights clearly and concisely to various stakeholders and work collaboratively in interdisciplinary teams.
PSO-11	Utilize statistical and machine learning methods to analyze and interpret complex datasets, providing actionable insights for decision-making.
PSO-12	Identify and address ethical concerns in data usage, ensuring compliance with legal standards and promoting fairness and transparency in data-driven decisions.

### Semester, Credit Framework, NSQF Level and Exit Points

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

### Credit Distribution

Sr. No.	Course	3 Year Degree Programme			4 Year Honors Degree Programme			4 Year Honors with Research Degree Programme		
		Course s	Credit s	%	Courses	Credits	%	Cours es	Credi ts	%
		(3 Yr)	(3 Yr)		(4 Yr)	(4 Yr)		(4 Yr)	(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
<b>Total ( Major) (A)</b>		<b>42</b>	<b>86</b>	<b>65.15</b>	<b>55</b>	<b>126</b>	<b>71.59</b>	<b>54</b>	<b>126</b>	<b>71.59</b>
1	Minor & RM	12	24	18.18	13	28	15.91	13	28	15.91
<b>Total (Minor) (B)</b>		<b>12</b>	<b>24</b>	<b>18.18</b>	<b>12</b>	<b>28</b>	<b>15.91</b>	<b>13</b>	<b>28</b>	<b>15.91</b>
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

<b>Total (C)</b>	<b>11</b>	<b>22</b>	<b>16.6 7</b>	<b>11</b>	<b>22</b>	<b>12.50</b>	<b>11</b>	<b>22</b>	<b>12.5 0</b>
<b>Grand Total (A+B+C)</b>	<b>65</b>	<b>132</b>	<b>100</b>	<b>79</b>	<b>176</b>	<b>100</b>	<b>78</b>	<b>176</b>	<b>100</b>

**Duration:**

- The program shall be a Full Time program.
- The duration of program shall be Three Years for Bachelor of Data Science and Four years for with Bachelor of Data Science (Honors with Research)
- Every year students will have exist option with:-  
(1<sup>st</sup>Year: Certificate, 2<sup>nd</sup> Year: Diploma, 3<sup>rd</sup> Year: Degree, 4<sup>th</sup> Year: Honors)
- The program shall be run on grant-in-aid basis.
- These students are allowed to re-enter the degree programme within three years and complete the degree programme within the stipulated maximum period of seven years

**Eligibility: 12<sup>th</sup> Pass with Science.**

**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 acquires 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, B. Sc. II, B. Sc. 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. (Data Science) Part-I SEM I**

Sr. No.	Components	Course Code	Course Title	Credits
1	Course-I	BDST 111	Fundamental Data Science	02
		BDST 112	Database Management System	02
		BDSP 113	Lab I based on Fundamental Data Science(BDST 111) and Database Management System(BDST 112)	02
2	Course-II	BDST 114	Computer programming with C	02
		BDST 115	Fundamental of Computer	02
		BDSP 116	Lab – I based on Computer Programming with C (BDST 114) and Fundamental of Computer (BDST 115)	02
3	Course-III	BDST 117	Computational Mathematics - I	02
		BDST 118	Computational Mathematics – II	02
		BDSP 119	Lab – I based on Computational Mathematics - I (BDST 117) and Statistics for Data Science – I (BDST 118)	02
7	OE	BDSTOE 1	Music Studies P-I	02
8	IKS	BDSTIKS 1	Introduction to Indian Knowledge System	02
<b>Total</b>				<b>22</b>

**B. Sc. (Data Science) Part-I SEM II**

Sr. No.	Components	Paper Code	Course	Credits
1	Course-I	BDST 121	Data Storage Technology	02
		BDST 122	Relational Database Management System	02
		BDSP 123	Lab – II based on Data Storage Technology (BDST 121) and Relational Database Management System (BDST 122)	02
3	Course-II	BDST 124	Web Development	02
		BDST 125	Operating System Concept	02
		BDST 126	Lab – II based Web development (BDST 124) and Operating System Concept (BDST 125)	02
4	Course-III	BDST 127	Computational Mathematics - III	02
		BDST 128	Computational Mathematics – IV	02
		BDSP 129	Lab – II based on Web development (BDST 124) and Operating System Concepts (BDST 125)	02
7	OE	BDSTOE 2	Music Studies P-II	02
8	VEC	BDSTVEC 1	Democracy, Election and Indian Constitution	02
<b>Total</b>				<b>22</b>

**B. Sc. (Data Science) Part-II**

<b>Semester III</b>				
Sr. No.	Components	Course Code	Course	Credits
1	Major	BDST 211	Python Programming – I	02
2		BDST 212	R Programming – I	02

3		BDSP 213	Lab III based on Python Programming – I (BDST 211) and R Programming – I (BDST 212)	02
4	Minor	BDSP 214	Core Java Programming	02
5		BDST 215	Computer Networking	02
		BDSP 216	Lab III based on Core Java Programming (BDST 214) and Computer Networking (BDST 215)	02
	OE	BDSTOE	Music Studies P-III	02
5	VSC	BDSTVSC I	Vocational Skill Course (Internet Data Security I)	02
6	SEC	BDSTSEC II	Data Processing Skills for Data Scientist	02
7	AEC - I	BDSTAEC I	English for Communication I	02
9	IKS	BDSTIKS II	Introduction to Indian Knowledge System	02
			<b>Total</b>	<b>22</b>

#### Semester IV

Sr. No.	Components	Course Code	Course	Credits
1	Major	BDST 221	Python Programming – II	02
2		BDST 222	R Programming – II	02
3		BDSP 223	Lab IV based on Python Programming – II (BDST 221) and R Programming – II (BDST 222)	02
4	Minor	BDSP 224	Advance Java Programming	02
5		BDST 225	Cyber Security	02
6		BDST 226	Lab IV based on Advance Java Programming (BDST 224) and Cyber Security (BDST 225)	02
	OE	BDSTOE	Music Studies P-III	02
7	VSC	BDST 226	Vocational Skill Course (Internet Data Security II)	02
8	SEC	BDSTSEC III	Data Visualization Skills for Data Scientist	02
9	AEC – II	BDSTAEC II	English for Communication II	02
10	VEC	BDSTVEC II	Data Science for Environmental Awareness	02
			<b>Total</b>	<b>22</b>

**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. (Data Science) Part-III

Semester V				
Sr. No.	Components	Course		Credits
1	Major	Data Science (P-IX)		02
2	Major	Data Science (P-X)		02
3	Major	Data Science (P-XI)		02
4	Electives	Computer Science (P-XIIE1) Data Science (P-XIIE2)		02
5	Major Lab	Lab - V		02
6	Elective Lab	Lab - I		02
7	VSC	VSC		02
8	AEC	English P-III		02
9	OJT	On Job Training in Data Science		04
10	CEP	CEP		02
			<b>Total</b>	<b>22</b>
Semester VI				
Sr.	Components	Course		Credits
1	Major	Data Science (P-XIII)		02
2	Major	Data Science (P-XIV)		02
3	Major	Data Science (P-XV)		02
4	Electives	Computer Science (P-XVIE1)/ Data Science (P-XVIE2)		02

5	Major Lab	Lab - VI	02
6	Elective Lab	Lab - II	02
7	VSC	VSC	02
8	SEC	AI in Data Science	02
9	FP	Field Project in Data Science	02
10	CC	Co-curricular Course in Data Science	02
11	AEC	English P-IV	02
<b>Total</b>			<b>22</b>

**EXIT OPTION: Award of UG Degree in Major with 132 credits OR Continue with Major & Minor.**

### B. Sc. (Data Science) Part-IV Honors Degree

<b>Semester VII</b>			
<b>Sr. No.</b>	<b>Components</b>	<b>Course</b>	<b>Credits</b>
1	Major	Data Science (P-XVII)	04
2	Major	Data Science (P-XVIII)	04
3	Major	Data Science (P-XIX)	04
4	Electives	Computer Science (P-XXE1)/ Data Science (P-XXE2)	02
5	Major Lab	Lab – VII	02
6	Elective Lab	Lab - III	02
7	Minor	Research Methodology	04
<b>Total</b>			<b>22</b>
<b>Semester VIII</b>			
<b>Sr.</b>	<b>Components</b>	<b>Course</b>	<b>Credits</b>
1	Major	Data Science (P-XXI)	04
2	Major	Data Science (P-XXII)	04
3	Major	Data Science (P-XXIII)	04
4	Electives	Computer Science (P-XXIVE1)/ Data Science (P-XXIVE2)	02
5	Major Lab	Lab – VIII	02
6	Elective Lab	Lab - IV	02
7	OJT	On Job Training in Data Science II	04
<b>Total</b>			<b>22</b>

**Award of Four-year UG Honors Degree in Major and Minor with 176 credits.**

### B. Sc. (Data Science) Part-IV Honors with Research Degree

<b>Semester VII</b>			
<b>Sr. No.</b>	<b>Components</b>	<b>Course</b>	<b>Credits</b>
1	Major	Data Science (P-XVII)	04
2	Major	Data Science (P-XVIII)	04
3	Electives	Computer Science (P-XIXE1)/ Data Science (P-XIXE2)	04
4	Major Lab	Lab – VII	02
5	Minor	Research Methodology	04
6	RP	Research Project in Data Science I	04
<b>Total</b>			<b>22</b>
<b>Semester VIII</b>			
<b>Sr.</b>	<b>Components</b>	<b>Course</b>	<b>Credits</b>
<b>Sr. No.</b>	<b>Components</b>	<b>Course</b>	<b>Credits</b>
1	Major	Data Science (P-XX)	04
2	Major	Data Science (P-XXI)	04
3	Electives	Computer Science (P-XXIIE1)/ Data Science (P-XXIIE2)	04
4	Major Lab	Lab – VIII	02
5	RP	Research Project in Data Science II	08

		<b>Total</b>	<b>22</b>
<b>Award of Four-year UG Honors Degree in Major and Minor with 176 credits.</b>			

Chairman  
BoS in Data Science

Secretary  
Academic Council

Chairman  
Academic Council