

 **KESHAV  
MAHAVIDYALAYA**

## **Programme Structure & Syllabus**

### **Department of Science**

### **Bachelor of Science (B.Sc.)**

(Physics, Chemistry, Mathematics, Zoology, Botany) with compulsory subjects

**Duration – 3 Years**

### **Vision of the Institution**

Our vision is to make leaders who contribute to the betterment of society by developing innovative skills, ethical and moral values, leadership qualities and teamwork, critical thinking, and research culture.

### **Mission of the Institution**

To enrich and empower the young generation through quality education.

2. To make higher education accessible to the underprivileged section of the society.
3. To be a student-centric institution by inculcating innovative and lifelong learning skills.
4. To introduce innovative techniques to make the teaching-learning process more effective.
5. To provide a holistic academic program to foster students' personal, professional, and social growth.

### **Program Educational Objectives (PEOs)**

**PEO1** : Students will gain a thorough understanding of key concepts in their chosen sciences (Physics, Chemistry, Mathematics, Zoology, Botany) and related subjects, preparing them for further study or careers in these fields.

**PEO2** : Students will build practical skills through lab work, experiments, and field studies, allowing them to apply their theoretical knowledge to real-world problems and research.

**PEO3** : Students will become skilled in research methods, enabling them to conduct independent studies, contribute new insights, and engage in scientific inquiry.

**PEO4** : Students will effectively communicate scientific concepts, research findings, and analysis in writing and speaking to various audiences, including academics and professionals.

**PEO5** : Students will use an interdisciplinary approach, combining knowledge from different scientific fields and required subjects to tackle complex problems and develop comprehensive solutions..

### **Program Outcomes (POs) and program Specific Outcomes (PSOs):**



**केशव महाविद्यालय अटलू  
जिला बारां ( राज. )**

**PO1:** Students will thoroughly understand core concepts in Physics, Chemistry, Mathematics, Zoology, Botany, and required subjects, giving them a strong base for further study or professional work.

**PO2:** Students will show practical skills through lab experiments, fieldwork, and problem-solving, applying their theoretical knowledge to real-world situations.

**PO3:** Students will be skilled in designing and conducting research, including collecting, analyzing, and interpreting data, and will contribute new insights to their field.

**PO4:** Students will effectively share scientific information and research findings in writing and speaking, tailored to both academic peers and the general public.

**PO5:** Students will maintain high ethical standards and professionalism in their scientific work, respecting research integrity, safety, and societal impacts.

**PSO1:** will utilize physics principles in practical applications such as electronics, material science, and energy systems.

**PSO2:** Students will apply chemical knowledge to address environmental issues, including pollution and sustainable practices.

**PSO3:** Students will use mathematical methods and techniques to solve complex problems across various fields of science and engineering.

**PSO4:** Students will understand animal physiology, behaviour, and taxonomy, and apply this knowledge to biological research and conservation.

**PSO5:** Students will conduct research on plant growth, development, and genetic variation, contributing to advancements in botany and related fields.

**B.Sc. (Physics) Semester Scheme**  
**Course Code PHY9600P**

**B.Sc. (Physics) I and II Semester**

Year / Semester	Serial Number, Code & Nomenclature of Paper			Duration of Exam	Teaching Hrs/Week & Credit			Distribution of Marks			Min. Pass Marks	
	Number	Code	Nomenclature		L	P	C	Internal Assess.	Sem. Assess.	Total Marks	Internal Assess.	Sem. Assess.
I Year I Semester	PHY101	DCC	Mechanics	3 Hrs	4	--	4	30	70	100	12	28
	PHY102	DCC	Physics Practical I	6 Hrs		4	2	--	50	50	--	25
	<b>Total</b>					<b>04</b>	<b>02</b>	<b>06</b>	<b>30</b>	<b>120</b>	<b>150</b>	<b>--</b>
I Year II Semester	PHY201	DCC	Electromagnetism	3 Hrs	4	--	4	30	70	100	12	28
	PHY202	DCC	Physics Practical II	6 Hrs		4	2	--	50	50	--	25
	<b>Total</b>					<b>04</b>	<b>02</b>	<b>06</b>	<b>30</b>	<b>120</b>	<b>150</b>	<b>--</b>
<b>First Year Total</b>					<b>08</b>	<b>04</b>	<b>12</b>	<b>60</b>	<b>240</b>	<b>300</b>	<b>--</b>	
<b>Option for exit with Certificate in Science (40 Credit Score)</b>												

**B.Sc. (Physics) III and IV Semester**

Year / Semester	Serial Number, Code & Nomenclature of Paper			Duration of Exam	Teaching Hrs/Week & Credit			Distribution of Marks			Min. Pass Marks	
	Number	Code	Nomenclature		L	P	C	Internal Assess.	Sem. Assess.	Total Marks	Internal Assess.	Sem. Assess.
II Year III Semester	PHY301	DCC	Thermal and Statistical Physics	3 Hrs	4	--	4	30	70	100	12	28
	PHY302	DCC	Physics Practical III	6 Hrs		4	2	--	50	50	--	25
	<b>Total</b>					<b>04</b>	<b>02</b>	<b>06</b>	<b>30</b>	<b>120</b>	<b>150</b>	<b>--</b>
II Year IV Semester	PHY401	DCC	Electronics	3 Hrs	4	--	4	30	70	100	12	28
	PHY402	DCC	Physics Practical IV	6 Hrs		4	2	--	50	50	--	25
	<b>Total</b>					<b>04</b>	<b>02</b>	<b>06</b>	<b>30</b>	<b>120</b>	<b>150</b>	<b>--</b>
<b>Second Year Total</b>					<b>08</b>	<b>04</b>	<b>12</b>	<b>60</b>	<b>240</b>	<b>300</b>	<b>--</b>	
<b>Option for exit with Diploma in Science (40 Credit Score)</b>												

**B.Sc. (Physics) V and VI Semester**

Year / Semester	Serial Number, Code & Nomenclature of Paper			Duration of Exam	Teaching Hrs/Week & Credit			Distribution of Marks			Min. Pass Marks	
	Number	Code	Nomenclature		L	P	C	Internal Assess.	Sem. Assess.	Total Marks	Internal Assess.	Sem. Assess.
III Year V Semester	PHY501	DSE	Electives: A. Elementary Quantum Mechanics and Spectroscopy B. Nuclear and Particle Physics C. Optics	3 Hrs	4	--	4	30	70	100	12	28
	PHY502	DSE	Physics Practical I	6 Hrs		4	2	--	50	50	--	25
	<b>Total</b>					<b>04</b>	<b>02</b>	<b>06</b>	<b>30</b>	<b>120</b>	<b>150</b>	<b>--</b>
III Year VI Semester	PHY601	DSE	Electives: A. Mathematical Physics B. Solid State Physics C. Basic Instrumentation Techniques	3 Hrs	4	--	4	30	70	100	12	28
	PHY602	DSE	Physics Practical II	6 Hrs		4	2	--	50	50	--	25
	<b>Total</b>					<b>04</b>	<b>02</b>	<b>06</b>	<b>30</b>	<b>120</b>	<b>150</b>	<b>--</b>
<b>First Year Total</b>					<b>08</b>	<b>04</b>	<b>12</b>	<b>60</b>	<b>240</b>	<b>300</b>	<b>--</b>	
<b>Option for exit with Degree in Science (40 Credit Score)</b>												

# Bachelor of Science (B.Sc.): Mathematics Group

*Subject Combination: Physics, Chemistry, Mathematics (PCM)*

## Semester Scheme of Examination

Year / Semester	Serial Number, Code and Nomenclature of Paper			Duration of Examination	Teaching (Hrs./Week) and Credits			Distribution of Maximum Marks			Minimum Pass Marks	
	Number	Code	Nomenclature		Lecture (L)	Practical (P)	Credit (C)	Internal Assess.	Sem. Assess.	Total Marks	Internal Assess.	Sem. Assess.
<b>1<sup>st</sup> Year I Semester</b>	1.1	PHY-----	Physics-I	3 Hrs.	4	--	4	30	70	100	12	28
	1.2	PHY-----	Physics Practical-I	6 Hrs.	--	4	2	--	50	50	--	25
	1.3	CHE ---- T	Chemistry-I	3 Hrs.	4	--	4	30	70	100	12	28
	1.4	CHE ---- P	Chemistry Practical-I	6 Hrs.	--	4	2	--	50	50	--	25
	1.5	MAT-----	Mathematics-I	3 Hrs.	4	--	4	30	70	100	12	28
	1.6	MAT-----	Mathematics Practical-I	6 Hrs.	--	4	2	--	50	50	--	25
	1.9/1.10	AEC-----	General Hindi / General English	1.5 Hrs.	2	--	2	--	50	50	--	20
<b>Total (I Semester)</b>				<b>28.5 Hrs.</b>	<b>14</b>	<b>12</b>	<b>20</b>	<b>90</b>	<b>410</b>	<b>500</b>	<b>36</b>	<b>179</b>
<b>1<sup>st</sup> Year II Semester</b>	2.1	PHY-----	Physics-II	3 Hrs.	4	--	4	30	70	100	12	28
	2.2	PHY-----	Physics Practical-II	6 Hrs.	--	4	2	--	50	50	--	25
	2.3	CHE ---- T	Chemistry-II	3 Hrs.	4	--	4	30	70	100	12	28
	2.4	CHE ---- P	Chemistry Practical-II	6 Hrs.	--	4	2	--	50	50	--	25
	2.5	MAT-----	Mathematics-II	3 Hrs.	4	--	4	30	70	100	12	28
	2.6	MAT-----	Mathematics Practical-II	6 Hrs.	--	4	2	--	50	50	--	25
	1.10/1.9	AEC-----	General English / General Hindi	1.5 Hrs.	2	--	2	--	50	50	--	20
<b>Total (II Semester)</b>				<b>28.5 Hrs.</b>	<b>14</b>	<b>12</b>	<b>20</b>	<b>90</b>	<b>410</b>	<b>500</b>	<b>36</b>	<b>179</b>
<b>Total (I and II Semesters)</b>				<b>57.0 Hrs.</b>	<b>28</b>	<b>24</b>	<b>40</b>	<b>180</b>	<b>820</b>	<b>1000</b>	<b>72</b>	<b>358</b>
<b>2<sup>nd</sup> Year III Semester</b>	3.1	PHY-----	Physics-III	3 Hrs.	4	--	4	30	70	100	12	28
	3.2	PHY-----	Physics Practical-III	6 Hrs.	--	4	2	--	50	50	--	25
	3.3	CHE ---- T	Chemistry-III	3 Hrs.	4	--	4	30	70	100	12	28
	3.4	CHE ---- P	Chemistry Practical-III	6 Hrs.	--	4	2	--	50	50	--	25
	3.5	MAT-----	Mathematics-III	3 Hrs.	4	--	4	30	70	100	12	28
	3.6	MAT-----	Mathematics Practical-III	6 Hrs.	--	4	2	--	50	50	--	25
	3.7	GEC-----	Environmental Studies	1.5 Hrs.	2	--	2	--	50	50	--	20
<b>Total (III Semester)</b>				<b>28.5 Hrs.</b>	<b>14</b>	<b>12</b>	<b>20</b>	<b>90</b>	<b>410</b>	<b>500</b>	<b>36</b>	<b>179</b>
<b>2<sup>nd</sup> Year IV Semester</b>	4.1	PHY-----	Physics-IV	3 Hrs.	4	--	4	30	70	100	12	28
	4.2	PHY-----	Physics Practical-IV	6 Hrs.	--	4	2	--	50	50	--	25
	4.3	CHE ---- T	Chemistry-IV	3 Hrs.	4	--	4	30	70	100	12	28
	4.4	CHE ---- P	Chemistry Practical-IV	6 Hrs.	--	4	2	--	50	50	--	25
	4.5	MAT-----	Mathematics-IV	3 Hrs.	4	--	4	30	70	100	12	28
	4.6	MAT-----	Mathematics Practical-IV	6 Hrs.	--	4	2	--	50	50	--	25
	4.7	GEC-----	Elementary Computer Applications	1.5 Hrs.	2	--	2	--	50	50	--	20
<b>Total (IV Semester)</b>				<b>28.5 Hrs.</b>	<b>14</b>	<b>12</b>	<b>20</b>	<b>90</b>	<b>410</b>	<b>500</b>	<b>36</b>	<b>179</b>
<b>Total (III and IV Semesters)</b>				<b>57.0 Hrs.</b>	<b>28</b>	<b>24</b>	<b>40</b>	<b>180</b>	<b>820</b>	<b>1000</b>	<b>72</b>	<b>358</b>

Year / Semester	Serial Number, Code and Nomenclature of Paper			Duration of Examination	Teaching (Hrs./Week) and Credits			Distribution of Maximum Marks			Minimum Pass Marks	
	Number	Code	Nomenclature		Lecture (L)	Practical (P)	Credit (C)	Int. Assess.	Sem. Assess.	Total	Int. Assess.	Sem. Assess.
3 <sup>rd</sup> Year V Semester	5.1(a)	PHY-----	Physics-V(a): Elective	3 Hrs.	4	--	4	30	70	100	12	28
	5.1(b)	PHY-----	Physics-V(b): Elective									
	5.1(c)	PHY-----	Physics-V(c): Elective									
	5.2(a)	PHY-----	Physics Practical-V(a): Elective	6 Hrs.	--	4	2	--	50	50	--	25
	5.2(b)	PHY-----	Physics Practical-V(b): Elective									
	5.2(c)	PHY-----	Physics Practical-V(c): Elective									
	5.3(a)	CHE ---- T(a)	Chemistry-V(a): Inorganic Chemistry	3 Hrs.	4	--	4	30	70	100	12	28
	5.3(b)	CHE ---- T(b)	Chemistry-V(b): Organic Chemistry									
	5.3(c)	CHE ---- T(c)	Chemistry-V(c): Physical Chemistry									
	5.4(a)	CHE ---- P(a)	Chemistry Practical-V(a): Inorganic Chemistry Practical	6 Hrs.	--	4	2	--	50	50	--	25
	5.4(b)	CHE ---- P(b)	Chemistry Practical-V(b): Organic Chemistry Practical									
	5.4(c)	CHE ---- P(c)	Chemistry Practical-V(c): Physical Chemistry Practical									
	5.5(a)	MAT-----	Mathematics-V(a): Elective	3 Hrs.	4	--	4	30	70	100	12	28
	5.5(b)	MAT-----	Mathematics-V(b): Elective									
	5.5(c)	MAT-----	Mathematics-V(c): Elective									
5.6(a)	MAT-----	Mathematics Practical-V(a):	6 Hrs.	--	4	2	--	50	50	--	25	
5.6(b)	MAT-----	Mathematics Practical-V(b):										
5.6(c)	MAT-----	Mathematics Practical-V(c):										
5.7	VAC-----	Value Added Course	1.5 Hrs.	2	--	2	--	50	50	--	20	
<b>Total (V Semester)</b>			<b>28.5 Hrs.</b>	<b>14</b>	<b>12</b>	<b>20</b>	<b>90</b>	<b>410</b>	<b>500</b>	<b>36</b>	<b>179</b>	
3 <sup>rd</sup> Year VI Semester	6.1(a)	PHY-----	Physics-VI(a): Elective	3 Hrs.	4	--	4	30	70	100	12	28
	6.1(b)	PHY-----	Physics-VI(b): Elective									
	6.1(c)	PHY-----	Physics-VI(c): Elective									
	6.2(a)	PHY-----	Physics Practical-VI(a): Elective	6 Hrs.	--	4	2	--	50	50	--	25
	6.2(b)	PHY-----	Physics Practical-VI(b): Elective									
	6.2(c)	PHY-----	Physics Practical-VI(c): Elective									
	6.3(a)	CHE ---- T(a)	Chemistry-VI(a): Inorganic Chemistry	3 Hrs.	4	--	4	30	70	100	12	28
	6.3(b)	CHE ---- T(b)	Chemistry-VI(b): Organic Chemistry									
	6.3(c)	CHE ---- T(c)	Chemistry-VI(c): Physical Chemistry									
	6.4(a)	CHE ---- P(a)	Chemistry Practical-VI(a): Inorganic Chemistry Practical	6 Hrs.	--	4	2	--	50	50	--	25
	6.4(b)	CHE ---- P(b)	Chemistry Practical-VI(b): Organic Chemistry Practical									
	6.4(c)	CHE ---- P(c)	Chemistry Practical-VI(c): Physical Chemistry Practical									
	6.5(a)	MAT-----	Mathematics-VI(a): Elective	3 Hrs.	4	--	4	30	70	100	12	28
	6.5(b)	MAT-----	Mathematics-VI(b): Elective									
	6.5(c)	MAT-----	Mathematics-VI(c): Elective									
6.6(a)	MAT-----	Mathematics Practical-VI(a): Elective	6 Hrs.	--	4	2	--	50	50	--	25	
6.6(b)	MAT-----	Mathematics Practical-VI(b): Elective										
6.6(c)	MAT-----	Mathematics Practical-VI(c): Elective										
6.7	SEC-----	Skill Enhancement Course	1.5 Hrs.	2	--	2	--	50	50	--	20	
<b>Total (VI Semester)</b>			<b>28.5 Hrs.</b>	<b>14</b>	<b>12</b>	<b>20</b>	<b>90</b>	<b>410</b>	<b>500</b>	<b>36</b>	<b>179</b>	
<b>Total (V and VI Semesters)</b>			<b>57.0 Hrs.</b>	<b>28</b>	<b>24</b>	<b>40</b>	<b>180</b>	<b>820</b>	<b>1000</b>	<b>72</b>	<b>358</b>	
<b>Grand Total of Three-Year B.Sc. Degree Programme (I to VI Semesters)</b>			<b>171.0 Hrs.</b>	<b>84</b>	<b>72</b>	<b>120</b>	<b>540</b>	<b>2460</b>	<b>3000</b>	<b>216</b>	<b>1074</b>	

# University of Kota, Kota

## Bachelor of Science (B.Sc.): Mathematics (PCM) and Biology (BCZ) Groups

### B.Sc. Chemistry

#### Semester Scheme of Examination

Year / Semester	Serial Number, Code and Nomenclature of Paper			Duration of Examination	Teaching (Hrs./Week) and Credits			Distribution of Maximum Marks			Minimum Pass Marks	
	Number	Code	Nomenclature		Lecture (L)	Practical (P)	Credit (C)	Internal Assess.	Sem. Assess.	Total Marks	Internal Assess.	Sem. Assess.
1 <sup>st</sup> Year I Semester	1.3	CHE ---- T	Chemistry-I	3 Hrs.	4	--	4	30	70	100	12	28
	1.4	CHE ---- P	Chemistry Practical-I	6 Hrs.	--	4	2	--	50	50	--	25
1 <sup>st</sup> Year II Semester	2.3	CHE ---- T	Chemistry-II	3 Hrs.	4	--	4	30	70	100	12	28
	2.4	CHE ---- P	Chemistry Practical-II	6 Hrs.	--	4	2	--	50	50	--	25
2 <sup>nd</sup> Year III Semester	3.3	CHE ---- T	Chemistry-III	3 Hrs.	4	--	4	30	70	100	12	28
	3.4	CHE ---- P	Chemistry Practical-III	6 Hrs.	--	4	2	--	50	50	--	25
2 <sup>nd</sup> Year IV Semester	4.3	CHE ---- T	Chemistry-IV	3 Hrs.	4	--	4	30	70	100	12	28
	4.4	CHE ---- P	Chemistry Practical-IV	6 Hrs.	--	4	2	--	50	50	--	25
3 <sup>rd</sup> Year V Semester	5.3(a)	CHE ---- T(a)	Chemistry-V(a): Inorganic Chemistry	3 Hrs.	4	--	4	30	70	100	12	28
	5.3(b)	CHE ---- T(b)	Chemistry-V(b): Organic Chemistry									
	5.3(c)	CHE ---- T(c)	Chemistry-V(c): Physical Chemistry									
	5.4(a)	CHE ---- P(a)	Chemistry Practical-V(a): Inorganic Chemistry Practical	6 Hrs.	--	4	2	--	50	50	--	25
	5.4(b)	CHE ---- P(b)	Chemistry Practical-V(b): Organic Chemistry Practical									
	5.4(c)	CHE ---- P(c)	Chemistry Practical-V(c): Physical Chemistry Practical									
3 <sup>rd</sup> Year VI Semester	6.3(a)	CHE ---- T(a)	Chemistry-VI(a): Inorganic Chemistry	3 Hrs.	4	--	4	30	70	100	12	28
	6.3(b)	CHE ---- T(b)	Chemistry-VI(b): Organic Chemistry									
	6.3(c)	CHE ---- T(c)	Chemistry-VI(c): Physical Chemistry									
	6.4(a)	CHE ---- P(a)	Chemistry Practical-VI(a): Inorganic Chemistry Practical	6 Hrs.	--	4	2	--	50	50	--	25
	6.4(b)	CHE ---- P(b)	Chemistry Practical-VI(b): Organic Chemistry Practical									
	6.4(c)	CHE ---- P(c)	Chemistry Practical-VI(c): Physical Chemistry Practical									