

## BACHELOR OF SCIENCE (HONS) COURSES. (B.Sc.)

**Objective:** The course aims at providing an opportunity to obtain Bachelor's education through distance mode in Science subjects. The course is useful to such persons who are already working and / or have missed their higher studies due to socio-economic problems or some other reason and are still desirous to upgrade their academic attainment. **B.Sc. (Hons.) courses are being offered in the following subjects:**

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|--------------------|------------------|------------------|
| (I) Botany,        | (II) Chemistry,  | (III) Geography, |
| (IV) Home Science, | (V) Mathematics, | (VI) Physics,    |
| (VII) Zoology.     |                  |                  |

**Eligibility Criteria for Admission:-** Intermediate (10+2) Science

### (I) Structure of B.Sc. (Hons.) Course:

A candidate for B.Sc. (Honours) Examination shall be required to select and be examined in (i) one Honours subject, comprising eight papers, (ii) two subsidiary subjects, each comprising two papers i.e. in four papers in all (iii) one language subject, comprising two papers, and (iv) one General Studies, totalling fifteen papers in all, divided into five papers for each Part I, Part II and Part III examinations of the course, as per following structure:

Examination	Hons. Subject	Subsidiary papers	Compulsory Language Subject	General Studies	Total paper
B. Sc.(Honours) Part I	2 Papers (Paper I & II)	2 Papers (Paper I of each of the two subsidiary subjects)	1 Paper (Paper I of Language Subject)(Composition	XX	5 Papers
B. Sc.(Honours) Part II	2 Papers (Paper III& IV)	2 Papers Paper II of each of the two subsidiary subjects)	1 Paper (Paper II of Language Subject)(Composition	XX	5 Papers
B.Sc.(Honours) Part III	4 Papers (Paper V, VI, VII and VIII)	XX	XX	1 Paper (General Studies	5 Papers
<b>TOTAL</b>	8 Papers	4 Papers	2 Papers	1 Paper	15 papers

**Note:-** A student, offering Geography for B.Sc. (Hons.) subject, will have to select two subsidiary subject out of Chemistry, Physics, Botany, Zoology Mathematics and Home Science. Similarly, a student, offering Home Science for B.Sc. (Hons.) subject, will have to select two subsidiary subjects out of chemistry, physics, Botany, Mathematics, Zoology and Geography

**Scheme of Examination-** Each of the above eight papers of Honours Subject and 4 papers of subsidiary subjects shall carry 80 marks for term end examination and 20 marks for practical / experimental examination/ home assignment, as the case may be, excepting Mathematics (Hons.) subject where there shall be no practical / experimental examination and, instead, each of honours papers shall carry 80 marks for term end theoretical examination and 20 marks for home assignment. The subsidiary papers for Maths (Hons.) students will be on the same pattern as for other science students of Science Hons. subjects. The two papers of Compulsory Language subject and one paper of General study shall carry 100 marks each. These will be fully theoretical papers with no practical work or home assignment. It will be compulsory for a students to pass in each paper of each Part of the examination. To pass in each paper a student must secure atleast 45% of marks in each of the Honours papers and 33% of marks in each paper of the Subsidiary subjects, Language subject and General studies. To determine 45% marks in Honours papers and 33% of marks in Subsidiary subjects, Language subject and General studies, the marks scored by a student, both in term-end written examination and practical work / home assignment, shall be clubbed and counted together and percentage determined accordingly. However, if a candidate has secured zero mark in term-end examination or home assignment/ practical examination in any paper or failed to appear in any paper or failed to submit assignment in any paper as the case may be, he/she will be deemed to have failed in that paper. Failure in one paper will mean failure in that Part of the examination. Hence, students must strive hard to pass individually in each paper. The term end examination shall be held for each part of the course at the end of each academic session and it will be compulsory to pass each Part of the examination before student is promoted to the next Part.

### (II) Abstract of the Syllabus of B.Sc. (Hons.) Courses:

The abstract of B.Sc. (Hons.) Courses is given below, subject wise. The breakup of marks between term end written examination and the home assignment/practical examination, as also the pass marks required to pass in each paper, are also indicated.

**(i) B.Sc. (Hons.) in Botany**

Paper	Title of the Honours paper	Distribution of Marks between Theory and Practical		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Practical	
<b>PART-I (1<sup>st</sup> Year)</b>				
1.	Cryptograms, Algae, Fungi, Lichens, Bryophyta, Petridophyta and Fossils	80	20	45
2.	Gymnosperm, Fossils and Angiosperm	80	20	45
<b>Total</b>		<b>160</b>	<b>40</b>	<b>90</b>
<b>PART-II (2<sup>nd</sup> Year)</b>				
3	Microbiology, Plant Pathology and Embryology	80	20	45
4	Anatomy, Cell Biology and Economic Botany	80	20	45
<b>Total</b>		<b>160</b>	<b>40</b>	<b>90</b>
<b>PART-III (3<sup>rd</sup> Year)</b>				
5	Physiology and Bio-Chemistry	80	20	45
6	Environmental Biology	80	20	45
7.	Cytogenetic and Molecular Biology	80	20	45
8.	Genetics	80	20	45
<b>Total</b>		<b>320</b>	<b>80</b>	<b>180</b>
<b>Grand Total</b>		<b>640</b>	<b>160</b>	<b>360</b>

**(ii) B.Sc. (Hons.) in Chemistry**

Paper	Title of the Honours paper	Distribution of Marks between Theory and Practical		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Practical	
<b>PART-I (1<sup>st</sup> Year)</b>				
1.	Physical Chemistry and Inorganic Chemistry	80	20	45
2.	Physical Chemistry and Organic Chemistry	80	20	45
<b>Total</b>		<b>160</b>	<b>40</b>	<b>90</b>
<b>PART-II (2<sup>nd</sup> Year)</b>				
3	Physical Chemistry and Inorganic Chemistry	80	20	45
4	Physical Chemistry and Organic Chemistry	80	20	45
<b>Total</b>		<b>160</b>	<b>40</b>	<b>90</b>
<b>PART-III (3<sup>rd</sup> Year)</b>				
5	Physical Chemistry	80	20	45
6	Inorganic Chemistry	80	20	45
7.	Organic Chemistry	80	20	45
8.	Introduction to Molecular Spectroscopy, Industrial Chemistry, Environmental Chemistry	80	20	45
<b>Total</b>		<b>320</b>	<b>80</b>	<b>180</b>
<b>Grand Total</b>		<b>640</b>	<b>160</b>	<b>360</b>

**(iii) B.Sc. (Hons.) in Geography**

Paper	Title of the Honours paper	Distribution of Marks between Theory and Assignment		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Assignment/ Practical	
<b>PART-I (1<sup>st</sup> Year)</b>				
1.	Geomorphology, Climatology & Oceanography	80	20 (Practical)	45
2.	Geography of Asia, China and Japan	80	20 Assignment	45
<b>Total</b>		<b>160</b>	<b>40</b>	<b>90</b>
<b>PART-II (2<sup>nd</sup> Year)</b>				
3	Geography of India, Bihar and Jharkhand	80	20 (Practical)	45
4	Economics and Resource Geography	80	20 Assignment	45
<b>Total</b>		<b>160</b>	<b>40</b>	<b>90</b>
<b>PART-III (3<sup>rd</sup> Year)</b>				
5	Geographical Thought and Applied Geography	80	20 Assignment	45
6	Human and Settlement Geography	80	20 Assignment	45
7.	Population Geography and Bio-Geography	80	20 (Practical)	45
8.	Environmental Geography	80	20 (Practical)	45
<b>Total</b>		<b>320</b>	<b>80</b>	<b>180</b>
<b>Grand Total</b>		<b>640</b>	<b>160</b>	<b>360</b>

**(vi) B.Sc. (Hons.) in Home Science**

Paper	Title of the Honours paper	Distribution of Marks between Theory and Assignment/Practical		Minimum Marks required to pass the examination (written exam.+ Assignment )
		Written exam	Assignment/ Practical	
<b>PART-I (1<sup>st</sup> Year)</b>				
1.	Food Science & Nutrition	80	20 (Practical)	45
2.	Human Development	80	20 Assignment	45
<b>Total</b>		<b>160</b>	<b>40</b>	<b>90</b>
<b>PART-II (2<sup>nd</sup> Year)</b>				
3	Dietetics	80	20 (Practical)	45
4	Family Resource Management	80	20 (Practical)	45
<b>Total</b>		<b>160</b>	<b>40</b>	<b>90</b>
<b>PART-III (3<sup>rd</sup> Year)</b>				
5	Textile and Clothing	80	20 (Practical)	45
6	Child Psychology	80	20 Assignment	45
7	Extension Education	80	20 Assignment	45
8	Family Relationship	80	20 Assignment	45
<b>Total</b>		<b>320</b>	<b>80</b>	<b>180</b>
<b>Grand Total</b>		<b>640</b>	<b>160</b>	<b>360</b>

**(v) B.Sc. (Hons.) in Mathematics.**

Paper	Title of the Honours paper	Distribution of Marks between Theory and Assignment		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Assignment	
	<b>PART-I (1<sup>st</sup> Year)</b>			
1.	Set Theory, Matrices, Abstract Algebra, Theory of Equations and Trigonometry	80	20	45
2.	Deferential Calculus, Integral Calculus and Analytical Geometry of Three Dimensions	80	20	45
	<b>Total</b>	<b>160</b>	<b>40</b>	<b>90</b>
	<b>PART-II (2<sup>nd</sup> Year)</b>			
3	Real Analysis, Infinite Sequences and Series, Linear Algebra	80	20	45
4	Differential Equation, Vector, Calculus, Statics and Dynamics	80	20	45
	<b>Total</b>	<b>160</b>	<b>40</b>	<b>90</b>
	<b>PART-III (3<sup>rd</sup> Year)</b>			
5	Topology, Real Analysis-II, Riemann Integration, Infinite Series and Functional Analysis	80	20	45
6	Abstract Algebra-II, Advance Set Theory, Discrete Mathematics and Complex Analysis	80	20	45
7	Linear Programming, Differential Equations – II, Attraction and Potential and Hydrostatics.	80	20	45
8	Numerical Analysis,	80	20	45
	<b>Total</b>	<b>320</b>	<b>80</b>	<b>180</b>
	<b>Grand Total</b>	<b>640</b>	<b>160</b>	<b>360</b>

**(vi) B.Sc. (Hons.) in Physics**

Paper	Title of the Honours paper	Distribution of Marks between Theory and Practical		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Practical	
	<b>PART-I (1<sup>st</sup> Year)</b>			
1.	Methods of Mathematical Physics and Mechanics, Special Theory of Relativity Waves and Vibration	80	20	45
2.	Heat, Thermodynamics and Statistical Physics	80	20	45
	<b>Total</b>	<b>160</b>	<b>40</b>	<b>90</b>
	<b>PART-II (2<sup>nd</sup> Year)</b>			
3	Optics and Electromagnetic Theory	80	20	45
4	Electrostatics and Magnetism, Current, Electricity and Modern Physics	80	20	45
	<b>Total</b>	<b>160</b>	<b>40</b>	<b>90</b>
	<b>PART-III (3<sup>rd</sup> Year)</b>			
5	Mathematical Physics and Classical Mechanics	80	20	45
6	Quantum Mechanics, Statistical Mechanism	80	20	45
7.	Classical Electrodynamics and Plasma Physics, Physics of Atoms, Molecules and Nuclei	80	20	45
8.	Solid State Physics and Electronics	80	20	45
	<b>Total</b>	<b>320</b>	<b>80</b>	<b>180</b>
	<b>Grand Total</b>	<b>640</b>	<b>160</b>	<b>360</b>

**(vii) B.Sc. (Hons.) in Zoology**

Paper	Title of the Honours paper	Distribution of Marks between Theory and Practical		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Practical	
<b>PART-I (1<sup>st</sup> Year)</b>				
1.	Systematic Position, General Organization and Life History	80	20	45
2.	Ecology, Animal Behaviour & Economic Zoology	80	20	45
<b>Total</b>		<b>160</b>	<b>40</b>	<b>90</b>
<b>PART-II (2<sup>nd</sup> Year)</b>				
3	Chordata,	80	20	45
4	Comparative Anatomy and Embryology	80	20	45
<b>Total</b>		<b>160</b>	<b>40</b>	<b>90</b>
<b>PART-III (3<sup>rd</sup> Year)</b>				
5	Bio Chemistry and Mammalian Physiology	80	20	45
6	Cell Biology, Genetics and Paleozoology	80	20	45
7.	Evolution of Zoogeography	80	20	45
8.	Mammalian Endocrinology, Paleozoology and Biometry	80	20	45
<b>Total</b>		<b>320</b>	<b>80</b>	<b>180</b>
<b>Grand Total</b>		<b>640</b>	<b>160</b>	<b>360</b>

**(III) Abstract of the Syllabus of Two Subsidiary Subjects to Be Offered By All Students of B.Sc. (Hons.) Course:**

A candidate of B.Sc. (Hons.) course shall be required to offer two subsidiary subjects, each consisting of two papers, from out of the following subsidiary subjects. The abstract of the syllabus of the B.Sc. (Subsidiary) subjects is given below:

**(i) B.Sc. Botany (Subsidiary)**

Paper	Title of the Subsidiary papers	Distribution of Marks between Theory and Assignment/ Practical		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Practical	
<b>PART-I ( 1<sup>st</sup> Year)</b>				
1	Microbiology, Algae, Fungi, Lichens, Bryophyta, Pteridophyta, Gymnosperm, Angiosperm	80	20	33
<b>PART-II ( 2<sup>nd</sup> Year)</b>				
2	Anatomy of Angiosperm, Embryology of Angiosperm, Cytology and Genetics, Physiology, Environmental Biology, Economic Botany	80	20	33

**(ii) B.Sc. Chemistry (Subsidiary)**

Paper	Title of the Subsidiary papers	Distribution of Marks between Theory and Assignment/ Practical		Minimum Marks required to pass the examination (written exam.+ Assignment)
		Written exam	Practical	
<b>PART-I ( 1<sup>st</sup> Year)</b>				
1	Physical Chemistry and Organic Chemistry	80	20	33
<b>PART-II ( 2<sup>nd</sup> Year)</b>				
2	Inorganic Chemistry	80	20	33

**(iii) B.Sc. Geography (Subsidiary)**

Paper	Title of the Subsidiary papers	Distribution of Marks between Theory and Assignment/ Practical		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Practical	
	<b>PART-I ( 1<sup>st</sup> Year)</b>			
1	Physical and Economic Geography	80	20	33
	<b>PART-II ( 2<sup>nd</sup> Year)</b>			
2	Geography of India, Bihar and Jharkhand	80	20	33

**(iv) B.Sc. Home Science (Subsidiary)**

Paper	Title of the Subsidiary papers	Distribution of Marks between Theory and Assignment/ Practical		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Assignment	
	<b>PART-I ( 1<sup>st</sup> Year)</b>			
1	Food Science and Nutrition	80	20	33
	<b>PART-II ( 2<sup>nd</sup> Year)</b>			
2	Human Development	80	20	33

**(v) B.Sc. Mathematics (Subsidiary)**

Paper	Title of the Subsidiary papers	Distribution of Marks between Theory and Assignment/ Practical		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Assignment	
	<b>PART-I ( 1<sup>st</sup> Year)</b>			
1	Set-Theory and Abstract Algebra, Trigonometry, Real Analysis, Co-ordinate Geometry, Differential Calculus and Vector Analysis	80	20	33
	<b>PART-II ( 2<sup>nd</sup> Year)</b>			
2	Integral Calculus, Differential Equations, Co-ordinate Geometry, Linear Programming	80	20	33

**(vi) B.Sc. Physics (Subsidiary)**

Paper	Title of the Subsidiary papers	Distribution of Marks between Theory and Assignment/ Practical		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Practical	
	<b>PART-I ( 1<sup>st</sup> Year)</b>			
1	Special Theory of Relativity, Mechanics and Properties of Matter, Waves and Acoustics, Thermal Physics	80	20	33
	<b>PART-II ( 2<sup>nd</sup> Year)</b>			
2	Electrostatics and Magnetism, Current Electricity and Modern Physics, Optics	80	20	33

**(vii) B.Sc. Zoology (Subsidiary)**

Paper	Title of the Subsidiary papers	Distribution of Marks between Theory and Assignment/ Practical		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Practical	
	<b>PART-I ( 1<sup>st</sup> Year)</b>			
1	Non-Chordata, Cell Biology, Genetics and Evolution	80	20	33

<b>PART-II ( 2<sup>nd</sup> Year)</b>				
2	Chordata Embryology, Biochemistry Physiology, Endocrinology	80	20	33

#### **(IV) Compulsory Language Subject to be offered by all B.Sc (Honours) Students**

All Honours students, opting for any of the three streams, namely, Arts, Science or Commerce, are required to offer one Compulsory Language subject which could be either (i) Hindi, or (ii) Hindi plus Language of their mother tongue. All Hindi speaking students must opt for Hindi as their Compulsory Language Subject, while non-Hindi speaking students are offered a composite Language Subject; half of which is Hindi and the other half of which is Urdu. Choice of any other language **as a mother tongue in place of Urdu is not being offered by this University for the time being.** Hence, students must select one out of these two options available to them as their Language Subject.

The Compulsory Language subject consists of two papers, each carrying 100 marks. Paper I forms part of Part I examination, while Paper II is included in Part II examination. Both these papers are entirely theoretical in nature, having no home assignment or practical content.

The abstract of syllabus of the Compulsory Language Subject is as follow :

Paper	Title of the Subsidiary papers	Distribution of Marks between Theory and Assignment		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Assignment	
<b>PART-I ( 1<sup>st</sup> Year)</b>				
1	Hindi Composition 100 Marks for Hindi speaking students or Hindi 50 Marks & Urdu 50 Marks for non-Hindi speaking students	100	xx	33
<b>PART-II ( 2<sup>nd</sup> Year)</b>				
2	Hindi Composition 100 Marks for Hindi speaking students or Hindi 50 Marks & Urdu 50 Marks for non-Hindi speaking students	100	xx	33

#### **(V) Compulsory General Studies paper to be offered by all B.Sc (Hons.) Students**

There shall be a compulsory General Studies paper for B.A. (Hons.) and B.Sc. (Hons.) students, having a common syllabus for both these streams. This papers shall carry 100 marks and will be entirely theoretical in nature, having no home assignment or practical content :

Paper	Title of the Subsidiary papers	Distribution of Marks between Theory and Assignment		Minimum Marks required to pass the examination (written exam. + Assignment )
		Written exam	Assignment	
<b>PART-III ( 3<sup>rd</sup> Year)</b>				
1	General Studies	100	xx	33