

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:**

- | | | |
|--------------------|------------------|------------------|
| (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 |
| TOTAL | 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 | |
| PART-I (1st Year) | | | | |
| 1. | Cryptograms, Algae, Fungi, Lichens, Bryophyta, Petridophyta and Fossils | 80 | 20 | 45 |
| 2. | Gymnosperm, Fossils and Angiosperm | 80 | 20 | 45 |
| Total | | 160 | 40 | 90 |
| PART-II (2nd Year) | | | | |
| 3 | Microbiology, Plant Pathology and Embryology | 80 | 20 | 45 |
| 4 | Anatomy, Cell Biology and Economic Botany | 80 | 20 | 45 |
| Total | | 160 | 40 | 90 |
| PART-III (3rd Year) | | | | |
| 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 |
| Total | | 320 | 80 | 180 |
| Grand Total | | 640 | 160 | 360 |

(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 | |
| PART-I (1st Year) | | | | |
| 1. | Physical Chemistry and Inorganic Chemistry | 80 | 20 | 45 |
| 2. | Physical Chemistry and Organic Chemistry | 80 | 20 | 45 |
| Total | | 160 | 40 | 90 |
| PART-II (2nd Year) | | | | |
| 3 | Physical Chemistry and Inorganic Chemistry | 80 | 20 | 45 |
| 4 | Physical Chemistry and Organic Chemistry | 80 | 20 | 45 |
| Total | | 160 | 40 | 90 |
| PART-III (3rd Year) | | | | |
| 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 |
| Total | | 320 | 80 | 180 |
| Grand Total | | 640 | 160 | 360 |

(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 | |
| PART-I (1st Year) | | | | |
| 1. | Geomorphology, Climatology & Oceanography | 80 | 20 (Practical) | 45 |
| 2. | Geography of Asia, China and Japan | 80 | 20 Assignment | 45 |
| Total | | 160 | 40 | 90 |
| PART-II (2nd Year) | | | | |
| 3 | Geography of India, Bihar and Jharkhand | 80 | 20 (Practical) | 45 |
| 4 | Economics and Resource Geography | 80 | 20 Assignment | 45 |
| Total | | 160 | 40 | 90 |
| PART-III (3rd Year) | | | | |
| 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 |
| Total | | 320 | 80 | 180 |
| Grand Total | | 640 | 160 | 360 |

(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 | |
| PART-I (1st Year) | | | | |
| 1. | Food Science & Nutrition | 80 | 20 (Practical) | 45 |
| 2. | Human Development | 80 | 20 Assignment | 45 |
| Total | | 160 | 40 | 90 |
| PART-II (2nd Year) | | | | |
| 3 | Dietetics | 80 | 20 (Practical) | 45 |
| 4 | Family Resource Management | 80 | 20 (Practical) | 45 |
| Total | | 160 | 40 | 90 |
| PART-III (3rd Year) | | | | |
| 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 |
| Total | | 320 | 80 | 180 |
| Grand Total | | 640 | 160 | 360 |

(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 | |
| | PART-I (1st Year) | | | |
| 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 |
| | Total | 160 | 40 | 90 |
| | PART-II (2nd Year) | | | |
| 3 | Real Analysis, Infinite Sequences and Series, Linear Algebra | 80 | 20 | 45 |
| 4 | Differential Equation, Vector, Calculus, Statics and Dynamics | 80 | 20 | 45 |
| | Total | 160 | 40 | 90 |
| | PART-III (3rd Year) | | | |
| 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 |
| | Total | 320 | 80 | 180 |
| | Grand Total | 640 | 160 | 360 |

(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 | |
| | PART-I (1st Year) | | | |
| 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 |
| | Total | 160 | 40 | 90 |
| | PART-II (2nd Year) | | | |
| 3 | Optics and Electromagnetic Theory | 80 | 20 | 45 |
| 4 | Electrostatics and Magnetism, Current, Electricity and Modern Physics | 80 | 20 | 45 |
| | Total | 160 | 40 | 90 |
| | PART-III (3rd Year) | | | |
| 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 |
| | Total | 320 | 80 | 180 |
| | Grand Total | 640 | 160 | 360 |

(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 | |
| PART-I (1st Year) | | | | |
| 1. | Systematic Position, General Organization and Life History | 80 | 20 | 45 |
| 2. | Ecology, Animal Behaviour & Economic Zoology | 80 | 20 | 45 |
| Total | | 160 | 40 | 90 |
| PART-II (2nd Year) | | | | |
| 3 | Chordata, | 80 | 20 | 45 |
| 4 | Comparative Anatomy and Embryology | 80 | 20 | 45 |
| Total | | 160 | 40 | 90 |
| PART-III (3rd Year) | | | | |
| 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 |
| Total | | 320 | 80 | 180 |
| Grand Total | | 640 | 160 | 360 |

(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 | |
| PART-I (1st Year) | | | | |
| 1 | Microbiology, Algae, Fungi, Lichens, Bryophyta, Pteridophyta, Gymnosperm, Angiosperm | 80 | 20 | 33 |
| PART-II (2nd Year) | | | | |
| 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 | |
| PART-I (1st Year) | | | | |
| 1 | Physical Chemistry and Organic Chemistry | 80 | 20 | 33 |
| PART-II (2nd Year) | | | | |
| 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 | |
| | PART-I (1st Year) | | | |
| 1 | Physical and Economic Geography | 80 | 20 | 33 |
| | PART-II (2nd Year) | | | |
| 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 | |
| | PART-I (1st Year) | | | |
| 1 | Food Science and Nutrition | 80 | 20 | 33 |
| | PART-II (2nd Year) | | | |
| 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 | |
| | PART-I (1st Year) | | | |
| 1 | Set-Theory and Abstract Algebra, Trigonometry, Real Analysis, Co-ordinate Geometry, Differential Calculus and Vector Analysis | 80 | 20 | 33 |
| | PART-II (2nd Year) | | | |
| 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 | |
| | PART-I (1st Year) | | | |
| 1 | Special Theory of Relativity, Mechanics and Properties of Matter, Waves and Acoustics, Thermal Physics | 80 | 20 | 33 |
| | PART-II (2nd Year) | | | |
| 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 | |
| | PART-I (1st Year) | | | |
| 1 | Non-Chordata, Cell Biology, Genetics and Evolution | 80 | 20 | 33 |

| PART-II (2nd Year) | | | | |
|---------------------------------------|--|----|----|----|
| 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 | |
| PART-I (1st Year) | | | | |
| 1 | Hindi Composition 100 Marks for Hindi speaking students or Hindi 50 Marks & Urdu 50 Marks for non-Hindi speaking students | 100 | xx | 33 |
| PART-II (2nd Year) | | | | |
| 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 | |
| PART-III (3rd Year) | | | | |
| 1 | General Studies | 100 | xx | 33 |