



| Cumulative minimum credits (Required for the award of certificates/ diploma/degree) | | | Subject I | Subject II | Subject III | Vocational | Co-curricular** | Audit Course* | Industrial training Survey/ Research project | Minimum Credits (Year) | | | | | | | | | |
|--|--|------|---|---------------|---|---|--|---|---|------------------------|---|-------------------------------------|--|--|--|--|---|--------------------|--|
| | | | Major | Major | Minor Elective | Minor | Minor | Compulsory | Major | | | | | | | | | | |
| | | | 4/5/6 Credits | 4/5/6 Credits | 4/5/6 Credits | 3 Credits | 2 Credits | Non-credits | 4/6 Credits | | | | | | | | | | |
| | Y. | Sem. | Own Faculty | Other Faculty | Other Faculty | Vocational/ Skill development course | Co-curricular (Qualifying) | Audit Course (Q & NC) | Inter/Intra Faculty related to main subject | | | | | | | | | | |
| 40 Certificate in Biochemistry | 1 | I | Introduction to Cell Biology and Genetics (Th-4) | | Mathematics / Essential Professional Communication/EVS (6-Credit) | Basic Microbiology and Bio safety Measures/ NPTEL SWAYAM /MOOC (3-Credit) | Food, Nutrition and Hygiene (2-Credit) | Rashtra Gaurav (0-Credit) | - | 40 (First Year) | | | | | | | | | |
| | | | Fundamentals of Biochemistry (Th-4) | | | | | | | | | | | | | | | | |
| | | | Introduction to Cell biology and Genetics Lab (Pract-2) | | | | | | | | | | | | | | | | |
| | | | Analytical Biochemistry Lab (Pract-2) | | | | | | | | | | | | | | | | |
| | | II | Human Physiology (Th-4) | | | Food Adulteration/ NPTEL/SWAYAM /MOOC (3-Credit) | First Aid and Health (2-Credit) | Artificial Intelligence in Biological Sciences (0-Credit) | | | | | | | | | | | |
| | | | Clinical Biochemistry (Th-4) | | | | | | | | | | | | | | | | |
| | | | Human Physiology Lab (Pract-2) | | | | | | | | | | | | | | | | |
| | | | Clinical Biochemistry Lab (Pract-2) | | | | | | | | | | | | | | | | |
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| 80 Diploma in Biochemistry (40+40) | 2 | III | Molecular Biology (Th-4) | | Chemistry/ Descriptive Stats/ Entrepreneurship Development (6-Credit) | Molecular diagnostics /NPTEL/ SWAYAM /MOOC (3-Credit) | Regional Language** (2-Credit) | | Industrial visit & survey report/ Internship (3-Credit) | 40 (Second Year) | | | | | | | | | |
| | | | Tools and Techniques in Biochemistry (Th-4) | | | | | | | | | | | | | | | | |
| | | | Molecular Biology Lab (Pract-2) | | | | | | | | | | | | | | | | |
| | | | Biochemical Tools and Techniques Lab (Pract-2) | | | | | | | | | | | | | | | | |
| | | IV | Enzymes and Hormones (Th-4) | | | | Physical Education and Yoga (2-Credit) | | | | | | | | | | | | |
| | | | Infection and Immunity (Th-4) | | | | | | | | | | | | | | | | |
| | | | Immunological Techniques Lab (Pract-2) | | | | | | | | | | | | | | | | |
| | | | Enzymology Lab (Pract-2) | | | | | | | | | | | | | | | | |
| | | | 3-Year Single Subject with Hons UG Degree | | | | | | | | | | | | | | | | |
| | | | 120 B.Sc. Biochemistry with Hons (80 + 50 = 130) | | | | | 3 | | | V | Bioenergetics and Metabolism (Th-4) | | | | | Research Project minor & seminar (5-Credit) | 50 (Third Year) | |
| Plant Biochemistry (Th-4) | | | | | | | | | | | | | | | | | | | |
| Genetic Engineering (Th-4) | | | | | | | | | | | | | | | | | | | |
| Industrial and Environmental biotechnology (Th 4) | | | | | | | | | | | | | | | | | | | |
| Metabolism Lab (Pract-2) | | | | | | | | | | | | | | | | | | | |
| Genetic Engineering Lab (Pract-2) | | | | | | | | | | | | | | | | | | | |
| VI | Biostatistics, Bioinformatics and Computer Application in Biochemistry (Th 4) | | | | | Research Project & dissertation (5 Credit) | | | | | | | | | | | | | |
| | Applied Biotechnology (El: Th 4)/ Genomics, Proteomics and Metabolomics (El: Th 4) | | | | | | | | | | | | | | | | | | |
| | Food and Nutritional Biochemistry (Th-4) | | | | | | | | | | | | | | | | | | |
| | Bionanotechnology (Th 4) | | | | | | | | | | | | | | | | | | |
| | Bioinformatics and Biostatistics Lab (Pract-2) | | | | | | | | | | | | | | | | | | |
| | Food and Nutritional Biochemistry Lab (Pract-2) | | | | | | | | | | | | | | | | | | |
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| 4-Year UG Degree with Hons (<75% Marks) | | | | | | | | | | | |
|---|---|------|---|--|--|--|--|--|---|---------------------|--|
| (130 + 40 = 170) (160) 4-Year B.Sc. Biochemistry with Hons | 4 | VII | Biomolecules: Structure and Function (Th-4) | | | | | | | 40 (Fourth) | |
| | | | Essentials of Molecular Biology (Th-4) | | | | | | | | |
| | | | Essentials of Microbiology (Th-4) | | | | | | | | |
| | | | Biophysical and Biochemical Methods (Th-4) | | | | | | | | |
| | | | Biochemistry, Microbiology and Bioinformatics Lab (Pract 2+2) | | | | | | | | |
| | | VIII | Cytology and Cell Signaling (Th 4) | | | | | | | | |
| | | | Enzymology and Enzyme kinetics (Th-4) | | | | | | | | |
| | | | Metabolism & Bioenergetics (Th-4) | | | | | | | | |
| | | | Gene expression regulation (Th-4) | | | | | | | | |
| | | | Analytical Biochemistry, Enzymology and Cell Biology Lab. (Pract 2+2) | | | | | | | | |
| 4-Year UG Degree with Hons & Research (≥75% Marks) | | | | | | | | | | | |
| (130 + 40 = 170) (160) 4-Year B.Sc. Biochemistry with Hons & Research | 4 | VII | Biomolecules and Basic Bioinformatics (Th-4) | | | | | | Research Project/ Internship -I (4-Credit) | 40 (Fourth Year) | |
| | | | Essentials of Molecular Biology (Th-4) | | | | | | | | |
| | | | Essentials of Microbiology (EI Th-4) | | | | | | | | |
| | | | Biophysical and Biochemical Methods (EI Th-4) | | | | | | | | |
| | | | Biochemistry, Microbiology and Bioinformatics Lab (Pract 2+2) | | | | | | | | |
| | | VIII | Cytology and Cell signaling (Th 4) | | | | | | Research Project-II (4 Credit) | | |
| | | | Enzymology, Metabolism & Bioenergetics (Th-4) | | | | | | | | |
| | | | Gene expression regulation (Th-4) | | | | | | | | |
| | | | Analytical Biochemistry, Enzymology and Cell biology Lab. (Pract 2+2) | | | | | | | | |
| | | | | | | | | | | | |
| (170 + 40 = 210) (200) M.Sc. Biochemistry | 5 | IX | Genetic Engineering (Th 4) | | | | | | Research Project/ Internship-III (4-Credit) | 40 (Fifth Year) | |
| | | | Plant Biochemistry (Th-4) | | | | | | | | |
| | | | Immunology and Physiological & Clinical Biochemistry (Th-4) | | | | | | | | |
| | | | Immunology and Molecular Biology Lab. (Pract 2+2) | | | | | | | | |
| | | X | Advanced Molecular Genetics (EI Th-4) | | | | | | Research Project-IV (4-Credit) | | |
| | | | Free Radical Biology (EI Th-4) | | | | | | | | |
| | | | Biotechnological Applications, IPR & Biosafety (Th-4) | | | | | | | | |
| | | | Nutritional Biochemistry (Th-4) | | | | | | | | |
| | | | Advanced Biochemistry Lab (Pract 2+2) | | | | | | | | |
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- ✓ Th-4 = Theory with 4 credits; P-2 = Practical with 2 credits; R = Research Project with 4 credits; Q: Qualifying; NC = Non-Credit.
- ✓ Co-curricular courses offered by UP higher education.
- ✓ Vocational courses offered by respective Department/University
- ✓ *Audit Courses: The respective Department/University offers Rashtra Gaurav and X+AI (Advanced Application of Artificial Intelligence in Chemical Sciences) as compulsory **Non-Credit** courses. All students will have to pass these courses for obtaining a Certificate, Diploma, Undergraduate Degree, or Undergraduate Honors Degree with Research only once.
- ✓ **Regional Language is a co-curricular course offered by the respective Department or University in the third semester, such as Hindi, Urdu, Awadhi, Sanskrit, etc.
- ✓ 01, 02, and 03 combinations are elective papers, out of which students must choose any one with a minimum of ten students' strengths.
- ✓ For entry into the 4-Year UG Degree with Hons and Research program, students must secure ≥75% marks in the 3-Year UG Degree program.
- ✓ Students with a 3-Year Single Subject with Hons UG Degree below 75% marks in the 3-Year UG Degree program go for a two-year PG program.