**Second Year Third Semester**

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| **A.THEORY** |
| **Sl No.** | **Subject Code** | **Theory** | **Contact Hours/Week** | **Credit****Points** |
|  |  |  | **L** | **T** | **P** | **Total** |  |
| **1** | HU-301 | Values & Ethics inProfession | 3 | 0 | 0 | 3 | 3 |
| **2** | CH- 301 | Basic EnvironmentalEngineering &Elementary Biology | 3 | 0 | 0 | 3 | 3 |
| **3** | CH- 302 | Chemistry  | 3 | 1 | 0 | 4 | 4 |
| **4** | BT-301 | Thermodynamics andKinetics | 3 | 0 | 0 | 3 | 3 |
| **5** | BT-302 | Biochemistry | 3 | 1 | 0 | 4 | 4 |
| **6** | BT-303 | Microbiology | 3 | 1 | 0 | 4 | 4 |
| **Total of Theory** | **21** | **21** |
| **B. PRACTICAL** |
| **7** | CH(BT)- 381 | Basic EnvironmentalEngineering &Elementary Biology Lab | 0 | 0 | 3 | 3 | 2 |
| **8** | CH-382 | Chemistry Lab  | 0 | 0 | 3 | 3 | 2 |
| **9** | BT-391 | Biochemistry Lab | 0 | 0 | 3 | 3 | 2 |
| **10** | BT-392 | Microbiology Lab | 0 | 0 | 3 | 3 | 2 |
| **Total of Practical** | **12** | **8** |
| **C. SESSIONAL** |
| **11** | GS-381 | General Studies - III | 3 | 1 | 0 | 4 | 4 |
| **Total of Sessional** | **4** | **4** |
| **Total of Semester** |  |  | **37** | **33** |

**Second Year Fourth Semester**

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| **A.THEORY** |
| **Sl No.** | **Subject Code** | **Theory** | **Contact Hours/Week** | **Credit****Points** |
|  |  |  | **L** | **T** | **P** | **Total** |  |
| **1** | M (CS)-401 | Numerical Methods | 2 | 1 | 0 | 3 | 2 |
| **2** | CH-401 | IndustrialStoichiometry | 3 | 1 | 0 | 4 | 4 |
| **3** | CH-402 | Transfer Operation I | 3 | 0 | 0 | 3 | 3 |
| **4** | BT-401 | Molecular Biology | 3 | 1 | 0 | 4 | 4 |
| **5** | BT-402 | Industrial Microbiology and Enzyme Technology | 3 | 1 | 0 | 4 | 4 |
| **Total of Theory** | **18** | **17** |
| **B. PRACTICAL** |
| **6** | HU-481 | Technical Report Writing &Language Lab Practice | 0 | 0 | 3 | 3 | 2 |
| **7** | M (CS)-491 | Numerical Methods | 0 | 0 | 2 | 2 | 1 |
| **8** | CH-481 | Transfer Operation I Lab | 0 | 0 | 3 | 3 | 2 |
| **9** | BT-491 | Molecular Biology Lab | 0 | 0 | 3 | 3 | 2 |
| **10** | BT-492 | Fermentation Technology Lab | 0 | 0 | 3 | 3 | 3 |
| **Total of Practical** | **14** | **10** |
| **C. SESSIONAL** |
| **11** | GS-481 | General Studies - IV | 3 | 1 | 0 | 4 | 4 |
| **Total of Sessional** | **4** | **4** |
| **Total of Semester** | **36** | **31** |

**Third Year – Fifth Semester**

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| **A.THEORY** |
| **Sl No.** | **Subject Code** | **Theory** | **Contact Hours/Week** | **Credit****Points** |
|  |  |  | **L** | **T** | **P** | **Total** |  |
| **1** | **HU-511** | Principles & Practices of Management | 3 | 0 | 0 | 3 | 3 |
| **2** | **BT-501** | Genetics | 3 | 1 | 0 | 4 | 4 |
| **3** | **BT-502** | Bioinformatics | 3 | 1 | 0 | 4 | 4 |
| **4** | **CH-515** | Transfer operation –II | 3 | 1 | 0 | 4 | 4 |
| **5** | **CS-515** | Database Management System | 3 | 0 | 0 | 3 | 3 |
| Total of Theory | 18 | 18 |
| B. PRACTICAL |
| **6** | **BT-591** | Genetics Lab | 0 | 0 | 3 | 3 | 2 |
| **7** | **BT-592** | Bioinformatics Lab | 0 | 0 | 3 | 3 | 2 |
| **8** | **CH-584** | Transfer operation Lab-II | 0 | 0 | 3 | 3 | 2 |
| **9** | **CS-584** | Database Management System Lab | 0 | 0 | 3 | 3 | 2 |
| Total of Practical | 12 | 8 |
| C. SESSIONAL |
| **10** | **GS-581** | General Studies – V | 3 | 1 | 0 | 4 | 4 |
| Total of Sessional | 4 | 4 |
| **Total of Semester** | **34** | **30** |

**Third Year – Sixth Semester**

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| **A.THEORY** |
| **Sl No.** | **Subject Code** | **Theory** | **Contact Hours/Week** | **Credit****Points** |
|  |  |  | **L** | **T** | **P** | **Total** |  |
| **1** | **HU-611** | Production & Operations Management | 2 | 0 | 0 | 2 | 2 |
| **2** | **BT-601** | Recombinant DNA Technology | 3 | 0 | 0 | 3 | 3 |
| **3** | **BT-602** | Immunology | 3 | 0 | 0 | 3 | 3 |
| **4** | **BT-603** | Plant Biotechnology | 3 | 0 | 0 | 3 | 3 |
| **5** | **BT-604** | 604A: Bioseperation Technology604B: Molecular Modeling & Drug Designing604C: Biophysics of Macromolecules604D: Biosensor & Diagnostics604E: Biofertilizer&Biopesticide | 3 | 0 | 0 | 3 | 3 |
| **6** | **CS-615** | Software Engineering | 3 | 0 | 0 | 3 | 3 |
| Total of Theory | 17 | 17 |
| B. PRACTICAL |
| **7** | **BT-691** | Recombinant DNA Technology Lab | 0 | 0 | 3 | 3 | 2 |
| **8** | **BT-692** | Immunology Lab | 0 | 0 | 3 | 3 | 2 |
| **9** | **BT693** | Plant Biotechnology Lab | 0 | 0 | 3 | 3 | 2 |
| **10** | **CS-684** | Software Engineering Lab | 0 | 0 | 3 | 3 | 2 |
| **11** | **BT-694** | Seminar ( Review and Presentation by PPT ) | 0 | 0 | 1 | 1 | 1 |
| **Total of Practical** | **13** | **9** |
| C. SESSIONAL  |
| **12** | **GS-681** | General Studies – VI | 3 | 1 | 0 | 4 | 4 |
| **Total of Sessional** | **4** | **4** |
| **Total of Semester** | **34** | **30** |

**Fourth Year – Seventh Semester**

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| **A.THEORY** |
| **Sl No.** | **Subject Code** | **Theory** | **Contact Hours/Week** | **Credit****Points** |
|  |  |  | **L** | **T** | **P** | **Total** |  |
| **1** | BT-701 | Bioreactor Design and Analysis | 3 | 0 | 0 | 3 | 3 |
| **2** | BT-702 | Animal Cell Culture & Animal Biotechnology | 3 | 0 | 0 | 3 | 3 |
| **3** | BT-703 | Food Biotechnology | 3 | 0 | 0 | 3 | 3 |
| **4** | BT-704 | 704A: Environmental Biotechnology & Pollution Control704B: Modeling & Simulation of Bioprocesses704C: Biomaterials704D: Biometalergy704E: Proteomics & Protein Engineering704F: Human Genomics | 3 | 0 | 0 | 3 | 3 |
| **5** | CHE-701 | A. Process Instrumentation & ControlB. Object Oriented Programming | 3 | 0 | 0 | 3 | 3 |
| Total of Theory | 15 | 15 |
| B. PRACTICAL |
| **6** | HU-781 | Group Discussion | 0 | 0 | 2 | 2 | 2 |
| **7** | BT-791 | Bioreactor Design & Analysis Lab | 0 | 0 | 3 | 3 | 2 |
| **8** | BT-792 | Food Biotechnology Lab | 0 | 0 | 3 | 3 | 2 |
| **9** | CHE-783 | Process Instrumentation & Control Lab | 0 | 0 | 3 | 3 | 2 |
| **10** | BT-793 | Seminar (Review and Presentation by PPT of a Research Paper) | 0 | 0 | 2 | 2 | 1 |
| **11** | BT-794 | Project Work -I (Project Repot-I) | 0 | 0 | 6 | 6 | 3 |
| **12** | BT-795 | Industrial project/training ( Report, Poster Presentation &Viva Voce ) | 6 to 8 weeks | 2 |
| Total of Practical | 19 | 14 |
| C. SESSIONAL  |
| **13** | GS-781 | General Studies – VII | 3 | 1 | 0 | 4 | 4 |
| Total of Sessional | 4 | 4 |
| Total of Semester | 38 | 33 |

**Fourth Year – Eighth Semester**

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| **A.THEORY** |
| **Sl No.** | **Subject Code** | **Theory** | **Contact Hours/Week** | **Credit****Points** |
|  |  |  | **L** | **T** | **P** | **Total** |  |
| **1** | HU(BT)-801 | Bioethics, Biosafety, IPR &Entrepreneurship in Biotechnology | 3 | 0 | 0 | 3 | 3 |
| **2** | BT-801 | Medical & PharmaceuticalBiotechnology | 3 | 0 | 0 | 3 | 3 |
| **3** | BT-802 | 802A: Renewable Energy Technology802B: Tissue Engineering802C: Biomedical Engineering802D: Post Harvest Technology802E: Metabolic Engineering | 3 | 0 | 0 | 3 | 3 |
| Total of Theory | 9 | 9 |
| B. PRACTICAL |
| **4** | BT-891 | Design Lab /Industrial problem/ Industrial related training | 0 | 0 | 6 | 6 | 4 |
| **5** | BT-892 | Project work-II | 0 | 0 | 12 | 12 | 4 |
| **6** | BT-893 | Project Report-II Report and Defense Seminar byPPT | 0 | 0 | 0 | 0 | 2 |
| **7** | BT-894 | Grand Viva ( Comprehensive Viva Voce) | 0 | 0 | 0 | 0 | 3 |
| Total of Practical | 18 | 13 |
| C. SESSIONAL |
| **8** | GS-881 | General Studies – VIII | 3 | 1 | 0 | 4 | 4 |
| Total of Sessional | 4 | 4 |
| Total of Semester | 31 | 26 |