|  | **S. NO** | **Course Code** | **Course Title** | **Credit Hours** | **Knowledge Area** |
| --- | --- | --- | --- | --- | --- |
| First Semester | 1 | HUM-102 | Islamic Studies/ Ethics | (2, 0, 2) | Humanities |
| 2 | HUM-103 | Functional English | (3, 0, 3) | Humanities |
| 3 | BS-104 | Calculus  | (3, 0, 3) | Natural Sciences |
| 4 | BS-103 | Applied Physics | (3, 0, 3) | Natural Sciences |
| 5 | CHE-111 | Chemical Process Principles-I | (3, 1, 4) | Engineering Foundation |
| 6 | CHE-151 | Computer and Computation | (2, 1, 3) | Computing |
| SecondSemester | 7 | BS-106 | Industrial Chemistry | (2, 1, 3) | Natural Sciences |
| 8 | HUM-101 | Pakistan Studies | (2, 0, 2) | Humanities |
| 9 | HUM-105 | Logical and critical thinking | (2, 0, 2) | Humanities |
| 10 | CHE-112 | Chemical Engineering Thermodynamics-I | (3, 0, 3) | Engineering Foundation |
| 11 | CHE-113 | Particulate Technology | (3, 1, 4) | Engineering Foundation |
| 12 | CHE-141 | Engineering Drawing and Graphics | (3, 1, 4) | Inter-Disciplinary Engineering |
| 13 | CHE-142 | Workshop Practice |  | Engineering Foundation |
| Third Semester | 14 | BS-202 | Differential Equations | (3, 0,3) | Natural Science |
| 15 | CHE-214 | Fluid Mechanics | (3, 1, 4) | Major based Core (Breadth) |
| 16 | CHE-215 | Chemical Process Principles-II | (3, 0, 3) | Engineering Foundation |
| 17 | CHE-243 | Electrical Technology & Electronics  | (2, 0, 2) | Inter-Disciplinary Engineering |
| 18 | CHE-244 | Engineering Materials  | (2, 0, 2) | Inter-Disciplinary Engineering |
| 19 | CHE-251 | Computational Methods for Chemical Engineers | (3, 1, 4) | Inter-Disciplinary Engineering |
| 20 | CHE-252 | Computer Aided Engineering Drawing | (2, 1, 3) | Computing  |
| Fourth Semester | 21 | BS-203 | Complex Variables and Transforms | (3, 0, 3) | Natural Sciences |
| 22 | HUM-204 | Technical Report Writing Skills | (3, 0, 3) | Humanities |
| 23 | CHE-216 | Heat Transfer | (3, 1, 4) | Major based Core (Breadth) |
| 24 | CHE-217 | Mass Transfer | (3, 1, 4) | Major based Core (Breadth) |
| 25 | CHE-221 | Chemical Engg. Thermodynamics-II  | (2, 1, 3) | Major based Core (Breadth) |
| 26 | BS-203 | Complex Variables and Transforms | (3, 0, 3) | Natural Sciences |
| FifthSemester | 27 | BS-301 | Probability and Statistics | (3, 0, 3) | Natural Science |
| 28 | CHE-318 | Chemical Process Technology | (3, 0, 3) | Engineering Foundation |
| 29 | CHE-322 | Separation Processes | (3, 0, 3) | Major Based Core (Breadth) |
| 30 | CHE-323 | Fuels and Energy | (3, 0, 3) | Major Based Core (Breadth) |
| 31 | CHE-353 | Computational Fluid Dynamics (CFD) | (3, 0, 3) | Major Based Core (Breadth) |
| SixthSemester | 32 | BS-302 | Numerical Analysis | (2, 1, 3) | Natural Science |
| 33 | CHE-324 | Chemical Reaction Engineering  | (3,1, 4) | Major Based Core (Breadth) |
| 34 | CHE-325 | Chemical Product Design | (3, 1, 4) | Major Based Core (Breadth) |
| 35 | CHE-326 | Transport Phenomena | (3, 0, 3) | Major Based Core (Breadth) |
| 36 | CHE-327 | Chemical Process Equipment Design | (2, 1, 3) | Major Based Core (Breadth) |
| SeventhSemester | 37 | HUM-406 | Engineering Economics | (3, 0, 3) | Inter-disciplinary Engg. |
| 38 | CHE-428 | Instrumentation and Process Control | (3, 1, 4) | Major Based Core (Depth) |
| 39 | CHE-431 | Biochemical Engineering  | (2, 0, 2) | Computing |
| 40 | CHE-454 | Chemical Process Design & Simulation  | (2, 1, 3) | Major Based Core (Depth) |
| 41 | CHE-461 | Entrepreneurship | (2, 0, 2) | Management Sciences |
| 42 | CHE-499 | Final Year Design Project-I | (0, 3, 3) | Honors Thesis/Project |
| EighthSemester | 43 | CHE-433 | Environmental Engineering | (3, 0, 3) | Major Based Core (Depth) |
| 44 | CHE-434 | Chemical Engineering Process Safety | (2, 0, 2) | Inter-disciplinary Engg. |
| 45 | CHE-435 | Petroleum Refinery Engineering | (2, 0, 2) |  Major Based Core (Depth) |
| 46 | CHE-432 | Petrochemical Engineering | (2, 0, 2) | Major Based Core (Depth) |
| 47 | CHE-462 | Production & Operations Management | (3, 0, 3) | Management Sciences |
| 48 | CHE-499 | Final Year Design Project-I | (0, 3, 3) | Honors Thesis/Project |