**BS(SE) Program Road Map (F2018) Total Credit Hours: 132**

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| **First Year** |
| **Fall Semester** | **Spring Semester** |
| **Course Code** | **Course Title** | **Cr. Hrs.** | **Pre-req** | **Course Code** | **Course Title** | **Cr. Hrs.** | **Pre-req** |
| IT1091 | Introduction to Info & Comm. Technologies | 3(2+1) |  | CC1022 | Object Oriented Programming  | 4(3+1) | CC1021 |
| NS125 | Applied Physics | 3 |  | CC1041 | Discrete Structures | 3 |  |
| MA100 | Calculus and Analytical Geometry  | 3 |  | EN112 | Communication & Presentation Skills | 3 | EN110 |
| EN110 | English Composition & Comprehension | 3 |  |  | Supporting Elective-I (e.g., Business Process Engineering) | 3 |  |
| CC1021 | Programming Fundamentals | 4(3+1) |  |  | GE/University Elective-I | 3 |  |
|  | **Semester Credit Hours** | **16** |  |  | **Semester Credit Hours** | **16** |  |

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| **Second Year** |
| **Fall Semester** | **Spring Semester** |
| **Course Code** | **Course Title** | **Cr. Hrs.** | **Pre-req** | **Course Code** | **Course Title** | **Cr. Hrs.** | **Pre-req** |
| CC2042 | Data Structures and Algorithms  | 4(3+1) | CC1022  | CC2141 | Database Systems  |  4(3+1) | CC2042  |
| MA210 | Linear Algebra | 3 |  |  | Supporting Elective-II (e.g., Operation Research) | 3 |  |
| CC3101 | Software Engineering  | 3 |  | MA150 | Probability and Statistics | 3 |  |
| SE3044 | GE/University Elective II | 3 |  | SE2102 | Software Requirement Engineering (SRE) | 3 | CC3101  |
|  | GE/University Elective III | 3 |  |  | GE/University Elective IV | 3 |  |
| POL101 | Pakistan Studies | 3 |  |  |  |  |  |
|  | **Semester Credit Hours** | **19** |  |  | **Semester Credit Hours** | **16** |  |
| **Third Year** |
| **Fall Semester** | **Spring Semester** |
| **Course Code** | **Course Title** | **Cr. Hrs.** | **Pre-req** | **Course Code** | **Course Title** | **Cr. Hrs.** | **Pre-req** |
| SE3103 | Software Design and Architecture | 3 |  SE102  | SE3111 | Software Construction and Development  | 3 (2+1) | SE3103 |
| CC3011 | Operating Systems | 4(3+1) | SE2042  | SE3162 | Web Engineering | 3 |  |
|  | SE Elective I  | 3 |  | CC3071 | Computer Networks | 4(3+1) |  |
|  | SE Elective II | 3 |  | CC4121 | Information Security | 3 |  |
|  | Supporting Elective III(e.g. Analysis of Algorithm, Formal Methods in Software Engineering) | 3 |  |  | SE Elective-III | 3 |  |
| ISL101 | Islamic Studies | 3 |  |  |  |  |  |
|  | **Semester Credit Hours** | **19** |  |  | **Semester Credit Hours** | **16** |  |

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| **Fourth Year** |
| **Fall Semester** | **Spring Semester** |
| **Course Code** | **Course Title** | **Cr. Hrs.** | **Pre-req** | **Course Code** | **Course Title** | **Cr. Hrs.** | **Pre-req** |
| CC4181 | Final Year Project-I | 3 |  | CC4182 | Final Year Project-II | 3 | SE4181  |
| SE4192 | Software Project Management | 3 | CC3101  | SE4114 | Human Computer Interaction | 3 | CC3101  |
| SE4112 | Software Quality Engineering | 3 | CC3101  | SE4092 | Professional Practices | 3 |  |
|  | SE Elective IV | 3 |  |  | SE Elective-V | 3 |  |
| SE4113 | Software Re-Engineering | 3 | SE3111  |  |  |  |  |
| EN210 | Technical and Business Writing | 3 |  |  |  |  |  |
|  | **Semester Credit Hours** | **18** |  |  | **Semester Credit Hours** | **12** |  |

**Total Credit Hours: 132**