**Updated BSEE Roadmap: Applicable starting from Fall 2020 Intake**

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| **UMT SEN Electrical Engineering Department** |
| **BS Electrical Engineering Roadmap** |
|  |
| **FIRST YEAR** |
| **Fall Semester (1st)** | **Spring Semester (2nd)** |
| **Code** | **Course Title** | **CH** | **Pre-req** | **Code** | **Course Title** | **CH** | **Pre-req** |
| CS-143 | Programming Fundamentals | 2 | - - - - | MA-230 | Differential Equations | 3 | MA-111 |
| CS-143L | Programming Fundamentals Lab | 1 | - - - - | EE-102L | Engineering Drawing | 1 | - - - - |
| EE-112L | Workshop Practice | 2 | - - - - | ME-121 | Engineering Mechanics | 3 | - - - - |
| EN-110 | English Grammar and Comprehension | 2 | - - - - | ME-121L | Engineering Mechanics Lab | 1 | - - - - |
| MA-112 | Applied Calculus | 3 | - - - - | HM-150 | Islamic Studies / Ethics (For Non-Muslim Students) | 2 | - - - - |
| NS-124 | Applied Physics | 3 | - - - - | EE-110 | Circuit Analysis | 3 | - - - - |
| NS-124L | Applied Physics Lab | 1 | - - - - | EE-110L | Circuit Analysis Lab | 1 | - - - - |
| SS-171 | Pakistan Studies  | 2 | - - - - | EN-112 | Composition and Communication | 2 | EN-110 |
| - - - - | - - - - | - - - | - - - - | - - - - | - - - - | - - - | - - - - |
| **Total** | 16 |  | **Total** | 16 |
|  |  |  |  |  |  |  |  |
| **SECOND YEAR** |
| **Semester (3rd)** |  |  | **Spring Semester (4th)** |
| **Code** | **Course Title** | **CH** | **Pre-req** | **Code** | **Course Title** | **CH** | **Pre-req** |
| EE-212 | Electrical Network Analysis | 3 | EE-110 | EE-227 | Computer Organization and Architecture | 3 | EE-220 |
| EE-212L | Electrical Network Analysis Lab | 1 | - - - - | EE-227L | Computer Organization and Architecture Lab | 1 | - - - - |
| EE-220 | Digital Logic Design | 3 | - - - - | EE-208 | Electronic Devices and Circuits | 3 | EE-110 |
| EE-220L | Digital Logic Design Lab | 1 | - - - - | EE-208L | Electronic Devices and Circuits Lab | 1 | - - - - |
| MA-210 | Linear Algebra | 3 | MA-111 | EE-213 | Data Structures and Algorithms | 3 | CS-143 |
| ME-322 | Applied Thermodynamics | 3 | - - - - | EN-223 | Research Project and Presentation | 2 | EN-112 |
| CS-151 | Object Oriented Programming | 2 | CS-143 | MA-233 | Complex Variables and Transforms | 3 | MA-111 |
| CS-151L | Object Oriented Programming Lab | 1 | CS-143 | MS-224 | Engineering Economics | 2 | - - - - |
|  |  |  |  | - - - - | - - - - |  | - - - - |
| **Total** | 17 |  | **Total** | 18 |
|  |  |  |  |  |  |  |  |
| **THIRD YEAR** |
| **Semester (5th)** |  |  | **Spring Semester (6th)** |
| **Code** | **Course Title** | **CH** | **Pre-req** | **Code** | **Course Title** | **CH** | **Pre-req** |
| EE-310 | Electromagnetics | 3 | NS-124 | EE-306 | Probability and Statistics for Engineers | 3 | - - - - |
| EE-315 | Signals and Systems | 3 | - - - - | EE-328 | Modern Microprocessor Systems | 3 | EE-227 |
| EE-315L | Signals and Systems Lab | 1 | - - - - | EE-328L | Modern Microprocessor Systems Lab | 1 | - - - - |
| EE-317 | Power Distribution and Transmission | 3 | - - - - | EE-360 | Control Systems | 3 | EE-315 |
| EE-317L | Power Distribution and Transmission Lab | 1 |  | EE-360L | Control Systems Lab | 1 | - - - - |
| EE-340 | Electrical Machines | 3 | EE-111 | EE-xxx | Elective-I | 3 | - - - - |
| EE-340L | Electrical Machines Lab | 1 | - - - - | EE-xxxL | Elective-I Lab | 1 | - - - - |
| MS-215 | Engineering Ethics | 3 | - - - - | SS-xxx | Social Science Elective | 2 | - - - - |
| **Total** | 18 |  | **Total** | 17 |
|  |  |  |  |  |  |  |  |
| **FOURTH YEAR** |
| **Semester (7th)** |  |  | **Spring Semester (8th)** |
| **Code** | **Course Title** | **CH** | **Pre-req** | **Code** | **Course Title** | **CH** | **Pre-req** |
| EE-410 | Communication Systems | 3 | EE-315 | EE-492 | Senior Design Project - II | 3 | - - - - |
| EE-410L | Communication Systems Lab | 1 | - - - - | MA-422 | Numerical Analysis | 3 | MA-111 |
| EE-465 | Instrumentation and Measurements | 3 | NS-124 | MA-422L | Engineering Management | 2 | - - - - |
| EE-465L | Inst. and Measurements Lab | 1 | - - - - | MS-323 | Elective-IV | 3 | - - - - |
| EE-491 | Senior Design Project - I | 3 | - - - - | EE-xxx | Elective-V | 3 | - - - - |
| EE-xxx | Elective-II | 3 | - - - - | EE-xxx | Elective-V Lab | 1 | - - - - |
| EE-xxx | Elective-III | 3 | - - - - | EE-xxxL | - - - - |  | - - - - |
| EE-xxxL | Elective-III Lab | 1 | - - - - | - - - - | - - - - |  | - - - - |
| **Total** | 18 |  | **Total** | 15 |
| **Total Credit Hours: 135** |