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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Revised BS IET Roadmap: Fall 2024** | | | | | | | |
|  | | | | | | | |
| **FIRST YEAR** | | | | | | | |
| **Fall Semester (1st)** | | | | **Spring Semester (2nd)** | | | |
| **Code** | **Course Title** | **CH** | **Pre-req** | **Code** | **Course Title** | **CH** | **Pre-req** |
| IE143 | Computer Programming | 3 |  | POL106 | Ideology and Constitution of Pakistan | 2 |  |
| IE143L | Computer Programming Lab | 1 |  | CS151 | Object Oriented Programming | 3 |  |
| ISL104 | Islamic Studies/Ethics | 2 |  | CS151L | Object Oriented Programming Lab | 1 |  |
| EN104 | Functional English | 2 |  | MA210 | Linear Algebra | 3 |  |
| IET112 | Calculus & Analytical  Geometry | 3 |  | IET130 | Digital Electronics | 2 |  |
| NS124 | Applied Physics | 2 |  | IET130 L | Digital Electronics Lab | 1 |  |
| NS124L | Applied Physics Lab | 1 |  | EN223 | Communication Skills | 3 |  |
| EE125 | Applications of ICT | 2 |  | MG330 | Organizational Behavior / Management Elective - I | 3 |  |
| EE125L | Applications of ICT Lab | 1 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Total** | | 17 |  | **Total** | | 18 | |
| **SECOND YEAR** | | | | | | | |
| **Fall Semester (3rd)** | |  |  | **Spring Semester (4th)** | | | |
| **Code** | **Course Title** | **CH** | **Pre-req** | **Code** | **Course Title** | **CH** | **Pre-req** |
| EE210 | Data Structures and Algorithms | 3 |  | IET232 | Operating Systems | 2 |  |
| EE210L | Data Structures and Algorithms Lab | 1 |  | IET232L | Operating Systems Lab | 1 |  |
| IET227 | Computer Networks | 3 |  | IET240 | Information Security | 2 |  |
| IET227L | Computer Networks Lab | 1 |  | IET240L | Information Security Lab | 1 |  |
| IET220 | Software Engineering | 2 |  | IET250 | Computer Architecture and Organization | 2 |  |
| IET220L | Software Engineering Lab | 1 |  | IET250L | Computer Architecture and Organization Lab | 1 |  |
| IET217 | Database systems | 2 |  | IET260 | Systems and Network Administration | 2 |  |
| IET217L | Database systems Lab | 1 |  | IET260L | Systems and Network Administration Lab | 1 |  |
| IETXXX | University Elective -I | 3 |  | IET270 | Artificial Intelligence | 3 |  |
|  |  |  |  | IET270L | Artificial Intelligence Lab | 1 |  |
|  |  |  |  | EN225 | Technical Writing | 2 |  |
| **Total** | | 17 |  | **Total** | | 18 | |
| **THIRD YEAR** | | | | | | | |
| **Fall Semester (5th)** | |  |  | **Spring Semester (6th)** | | | |
| **Code** | **Course Title** | **CH** | **Pre-req** | **Code** | **Course Title** | **CH** | **Pre-req** |
| IETXXX | University Elective – II | 2 |  | IETXXX | Management Elective-II | 2 |  |
| IETXXX | Depth Elective – I | 1 |  | IETXXX | Depth Elective-III | 1 |  |
| IETXXX L | Depth Elective – I Lab | 2 |  | IETXXX L | Depth Elective-III Lab | 1 |  |
| IETXXX | Depth Elective – II | 2 |  | IET362 | Digital Forensics and Laws | 2 |  |
| IETXXX L | Depth Elective – II Lab | 2 |  | IET362L | Digital Forensics and Laws Lab | 1 |  |
| IET351 | Professional Practices | 2 |  | IET363 | IT Security Audit and Evaluation | 2 |  |
| EE306 | Probability and Statistics for Engineers | 3 |  | IET363L | IT Security Audit and Evaluation Lab | 1 |  |
| IET320 | Web Development  Technologies | 2 |  | IET361 | IDTE-I | 1 |  |
| IET320L | Web Development  Technologies Lab | 1 |  | IET361L | IDTE-I Lab | 1 |  |
|  |  |  |  | IET364 | Project Part-I | 3 |  |
| **Total** | | 17 |  | **Total** | | 15 | |
| **FOURTH YEAR** | | | | | | | |
| **Fall Semester (7th)** | |  |  | **Spring Semester (8th)** | | | |
| **Code** | **Course Title** | **CH** | **Pre-req** | **Code** | **Course Title** | **CH** | **Pre-req** |
| IET470 | Health, Safety, and the Environmentprof | 1 |  | IET481 | Supervised Industrial Training (COOP) | 14 | - - - - |
| IETXXX | Depth Elective-IV | 2 |  |  |  |  | - - - - |
| IETXXXL | Depth Elective-IV Lab | 1 |  |  |  |  |  |
| IETXXX | Depth Elective-V | 2 |  |  |  |  |  |
| IETXXXL | Depth Elective-V Lab | 1 |  |  |  |  |  |
| IET473 | Ethical Hacking and Penetration Testing | 2 |  |  |  |  |  |
| IET473L | Ethical Hacking and Penetration Testing Lab | 1 |  |  |  |  |  |
| IETXXX | IDTE-II | 2 |  |  |  |  |  |
| IETXXX L | IDTE-II Lab | 1 |  |  |  |  |  |
| IET474 | Project Part-II | 3 |  |  |  |  |  |
| **Total** | | 16 |  | **Total** | | 14 |  |
| **Total Credit Hours: 132** | | | | | | | |
|  | | | | | | | | |

**List of Electives**

1. Cryptography 1+2 (IET311, IET311L)
2. Malware Analysis 2+2 (IET312, IET312L)
3. Wireless Network Security 1+1 (IET313, IET313L)
4. Machine Learning 2+1 (IET318, IET318L)
5. Vulnerability Assessment and Reverse Engineering 2+1 (IET321, IET321L)
6. GPS Security 1+1 (IET322, IET322L)
7. Secure Software Design and Development 2+2 (IET410, IET410L)
8. Embedded Systems Security 1+2 (IET412, IET412L)
9. Blockchain Technology and Security 2+1 (IET413, IET413L)
10. Software Defined Networks 2+1 (IET420, IET420L)
11. Smart Surveillance Systems 1+1 (IET421, IET421L)
12. Error Correction and Coding Techniques 1+1 (IET422, IET422)
13. Cryptanalysis 1+2 (IET423, IET423L)
14. Web Application Security 2+1 (IET430, IET430L)
15. Operating System Security 2+1 (IET431, IET431L)
16. Internet of Things 2+1
17. Security in AdHoc Sensor Networks 2+1 (IET435, IET435L)
18. Security in Cloud Environment 2+1 (IET440, IET440L)
19. Cloud Computing and lot 2+1 (IET442, IET442L)

**List of University Electives 3CHs**

1. Critical Thinking 3 (SS201)
2. Health and Wellbeing 3 (HWB101)
3. Psychology of Mind and Behavior 3 (PHY110)
4. Economics 3
5. Life and Learning 3 (SD221)
6. Foreign Language 3 (SD222)
7. Logical Reasoning 3 (SD223)
8. Civics and Community Engagement 2 (SD210)

**List of Management Sciences Electives**

1. Technopreneurship 2
2. Engineering Management 2
3. Innovation & Entrepreneurship 3
4. Leadership 2
5. Financial Accounting 2
6. Organizational Behavior 3
7. Project Management 3

**List of Interdisciplinary Technology Electives**

1. Agricultural Technologies 1+1 (IET370, IET370L)
2. Bioinformatics 1+1
3. Renewable Energy 2+1 (IET450, IET450L)
4. Biotechnology 2+1 (IET455, IET455L)